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SESSIONAL PAPERS

VOLUME 8

FOURTH SESSION OF THE THIRTEENTH PARLIAMENT

OF THE

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SESSION 1920

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11. Annual Report of the Department of Customs and Inland Revenue, containing accounts of revenue with statements relative to the Imports, Exports, Customs and Inland Revenue of the Dominion of Canada, for the fiscal year ended March 31, 1919, as compiled from official returns. Presented by Hon. Mr. Burrell, March 4, 1920. *Printed for distribution and sessional papers.*

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15. Report of the Minister of Agriculture for the Dominion of Canada, for the year ended March 31, 1919. Presented by Hon Mr. Tolmie, March 9, 1920. *Printed for distribution and sessional papers.*

15a. Report on "The Agricultural Instruction Act," 1918-19, pursuant to Section 8, Chapter 5 of 3-4 George V. Presented by Hon. Mr. Tolmie, March 9, 1920..... *Printed for distribution and sessional papers.*

15b. Report of the Veterinary Director General, year ending March 31, 1919. *Printed for distribution and sessional papers.*

16. Report of the Dominion Experimental Farms for the fiscal year ending 31st March, 1919. Appendix to the Report of the Minister of Agriculture. Presented by Hon. Mr. Tolmie, March 9, 1920. *Printed for distribution and sessional papers.*

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17c. Census of Industry—Pulp and Paper..... *Printed for distribution and sessional papers.*

18. Annual Report of the Department of Immigration and Colonization, for the fiscal year ended March 31, 1919. Presented by Hon. Mr. Calder, March 3, 1920..... *Presented for distribution and sessional papers.*

19. Report of the Minister of Public Works on the works under his control for the fiscal year ended March 31, 1919. Presented by Hon. Mr. Reid, March 19, 1929..... *Printed for distribution and sessional papers*

20. Annual Report of the Department of Railways and Canals, for the fiscal year from April 1, 1918, to March 31, 1919. Presented by Hon. Mr. Reid, May 20, 1920... *Printed for distribution and sessional papers.*

20a. Canal Statistics for the season of navigation of 1919 *Printed for distribution and sessional papers*

20b. Railway Statistics of the Dominion of Canada year of 1919 *Printed for distribution and sessional papers*

20c. Fourteenth Report of the Board of Railway Commissioners for Canada, for the year ending March 31, 1919 Presented by Hon. Mr. Reid, March 19, 1920... *Printed for distribution and sessional papers*

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20d. Fifteenth Report of the Board of Railway Commissioners for Canada, for the nine months ending December 31, 1919. (Manuscript copy.) Presented by Hon. Mr. Reid, April 19, 1920.

21. Fifty-second Annual Report of the Department of Marine and Fisheries, for the year 1918-19—Marine. Presented by Hon. Mr. Ballantyne, March 1, 1920..... *Printed for distribution and sessional papers.*

22. Marine and Fisheries—List of Vessels, year 1919 *Printed for distribution and sessional papers.*

23. Supplement to the Fifty-second Annual Report of the Department of Marine and Fisheries for the fiscal year 1918-1919 (Marine)—Steamboat Inspection Report. Presented by Hon. Mr. Ballantyne, March 1, 1920. *Printed for distribution and sessional papers.*

24. Report of the Postmaster General for the year ended March 31, 1919. Presented by Hon. Mr. Rowell, March 2, 1920. *Printed for distribution and sessional papers.*

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25. Annual Report of the Department of the Interior, for the fiscal year ended March 31, 1919. Presented by Hon. Mr. Meighen, March 10, 1920. *Printed for distribution and sessional papers.*

25a. Report of the Topographical Surveys Branch of the Department of the Interior, year 1918-1919. *Printed for distribution and sessional papers.*

25b. Sixteenth Report of the Geographic Board of Canada, containing all decisions from April 1, 1917, to March 31, 1919. Presented by Hon. Mr. Meighen, April 28, 1920 *Printed for distribution and sessional papers.*

26. Report of the Geological Survey Branch, Department of Mines, year 1919 *Printed for distribution and sessional papers*

26a. Summary Report of the Mines Branch of the Department of Mines, for the year ending December 31, 1919. *Printed for distribution and sessional papers.*

27. Report of the Department of Indian Affairs for the year ended March 31, 1919. Presented by Hon. Mr. Meighen, March 16, 1920... *Printed for distribution and sessional papers.*

28. Report of the Royal Northwest Mounted Police for the year ended September 30, 1919. Presented by Hon. Mr Rowell, March 22, 1920 *Printed for distribution and sessional papers.*

29. Report of the Secretary of State of Canada for the year ended March 31, 1919. Presented by Hon. Mr. Sifton, March 10, 1920 *Printed for distribution and sessional papers.*

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(This volume is bound in two parts.)

30. (Sessional Paper No. 18, 6-7 Edward VII, Rev. Ed.) Second Annual Report of the Historical Documents Publication Board, together with accompanying printed volumes, being the second edition, revised and enlarged, of the first volume of the Constitutional Documents relating to Canada 1759-1791, now issued in two parts. Presented by Hon. Mr. Rowell, March 18, 1920... *Printed for distribution and sessional papers.*

CONTENTS OF VOLUME 10.

32. Eleventh Annual Report of the Civil Service Commission of Canada, September 1, 1918–December 31, 1919. Presented by Hon. Mr. Sifton, April 16, 1920 ..... *Printed for distribution and sessional papers.*

33. Annual Report of the Department of Public Printing and Stationery for the fiscal year ended March 31, 1919. Presented by Hon. Mr. Sifton, June 8, 1920 ..... *Printed for distribution and sessional papers.*

34. Report of the Secretary of State for External Affairs, for the year ended March 31, 1919. Presented by Hon. Mr. Rowell, April 22, 1920 ..... *Printed for distribution and sessional papers.*

35. Report of the Minister of Justice as to Penitentiaries for year ending March 31, 1919.
Printed for distribution and sessional papers.

36. Report of the Militia Council for the Dominion of Canada, for the fiscal year ending March 31, 1919. Presented by Hon. Mr. Guthrie, May 28, 1920 ..... *Printed for distribution and sessional papers.*

37. Report of the Department of Labour for the year ended March 31, 1919. The Senate.
Printed for distribution and sessional papers.

38. Annual Report of the Editorial Committee for the year 1920. Presented 1920.
Printed for distribution and sessional papers.

39. Report of the Department of the Naval Service, for the fiscal year ending March 31, 1919. Presented by Hon. Mr. Ballantyne, March 1, 1920 ..... *Printed for distribution and sessional papers.*

40. Fifty-second Annual Report of the Fisheries Branch of the Department of the Naval Service, 1918. Presented by Hon. Mr. Ballantyne, March 11, 1920 ..... *Printed for distribution and sessional papers.*

1. Report of the Joint Librarians of Parliament. Presented by Hon. Mr. Speaker, February 26, 1920 ..... *Not printed.*

42. Copy of the Treaty of Peace between the Allied and Associated Powers and Bulgaria, signed at Neuilly-sur-Seine on the 27th day of November, 1919. Presented by Hon. Mr. Rowell, February 26, 1920.
Printed for distribution to senators and members.

42*a*. The Czecho-Slovak Minorities Treaty—Treaty between the Principal Allied and Associated Powers and Czecho Slovakia, signed at Saint-Germain-en-Laye, September 10, 1919. Ratification on behalf of Canada authorized by Order in Council of December 1, 1919. Presented by Hon. Mr. Rowell, March 1, 1920.
Not printed.

42*b*. The Serb-Croat-Slovene Minorities Treaty—Treaty between the Principal Allied and Associated Powers and the Serb-Croat-Slovene State, signed at Saint-Germain-en-Laye, September 10, 1919. Ratification on behalf of Canada authorized by Order in Council of December 1, 1919. Presented by Hon. Mr. Rowell, March 1, 1920.
Not printed.

42*c*. Arms Traffic Convention—Convention for the control of the trade in arms and ammunition, and Protocol, signed September 10, 1919. Ratification on behalf of Canada authorized by Order in Council of December 9, 1919. Presented by Hon. Mr. Rowell, March 1, 1920 ..... *Not printed.*

42*d*. Liquor Traffic Convention—Convention relating to the liquor traffic in Africa, and Protocol, signed at Saint-Germain-en-Laye, September 10, 1919. Ratification on behalf of Canada authorized by Order in Council of December 1919. Presented by Hon. Mr. Rowell, March 1, 1920 ..... *Not printed.*

42*e*. Berlin and Brussels Acts Convention—Convention revising the General Act of Berlin, February 26, 1885, and the General Act and Declaration of Brussels, July 2, 1890, signed at Saint-Germain-en-Laye, September 10, 1919. Ratification on behalf of Canada authorized by Order in Council of December 9, 1919. Presented by Hon. Mr. Rowell, March 1, 1920 ..... *Not printed.*

42*f*. Return to an Address to His Excellency the Administrator, of the 22nd March, 1920, for a copy of the Orders in Council of December 1, 1919, and December 9, 1919, respecting ratification of the treaties and conventions laid before the House of Commons on Monday, March 1, 1920 Presented March 29, 1920, Mr. Fielding ..... *Not printed.*

42*g*. Copy of the English text of the Treaty between the Principal Allied and Associated Powers and Rumania, signed at Paris, December 9, 1919. Presented by Hon. Mr. Rowell, April 14, 1920 ..... *Not printed.*

42*h*. Copy of the agreement of September 10, 1919, between the Allied and Associated Powers with regard to the contributions to the cost of liberation of the territories of the former Austro-Hungarian monarchy, and copy of Declaration dated the 8th of December, 1919, modifying this Agreement. Presented by Hon. Mr. Rowell, April 21, 1920 ..... *Not printed.*

42*i*. Copy of Agreement of September 10, 1919, between the Allied and Associated Powers and Italy with regard to the Italian reparation payments and copy of Declaration of December 8, 1919, modifying this Agreement. Presented by Hon. Mr. Rowell, April 21, 1920 ..... *Not printed.*

43. Order in Council, P.C. 69, dated February 28, 1920, Payment of Command Money to Captain Superintendents H.M.C. Dockyards. Presented by Hon. Mr. Ballantyne, March 1, 1920 ..... *Not printed.*

43*a*. Copy of Order in Council, P.C. 566, dated March 17, 1920: Cancellation of Orders in Council authorizing and governing the payment of Separation Allowance to dependents of Officers and Men in the Canadian Naval Service Presented by Hon. Mr. Ballantyne, March 22, 1920 ..... *Not printed.*

43*b*. Order in Council, P.C. 559, dated 17th March, 1920: Naval Forces of Canada, including the Naval Volunteer Forces, placed on a peace footing. Presented by Hon. Mr. Ballantyne, March 25, 1920 ..... *Not printed.*

43*c*. Copy of Order in Council P.C. 1061, dated 15th May, 1920: Payment of Gratuity to Ratings and Warrant Officers of the Royal Canadian Navy. Presented by Hon. Mr. Ballantyne, May 21, 1920 ..... *Not printed*

CONTENTS OF VOLUME 10—*Continued.*

43*d*. Copy of Order in Council, P.C. 1005, dated 20th May, 1920; Engagement of Seamen in Royal Canadian Navy. Presented May 31, 1920. Mr. Hocken *Not printed.*

43*e*. Order in Council, No. P.C. 1155, dated May 22, 1920,—Amendments to Rates of Pay for Surgeon Lieutenants, Royal Canadian Navy. (Sessional Papers, 1920, No. .) The Senate *Not printed.*

44. Amendments to Radiotelegraph Regulations, Nos. 78, 25 and 104. Presented by Hon. Mr. Ballantyne, March 1, 1920. *Not printed.*

44*a*. Amendment to Radiotelegraph Regulation No. 92. Presented by Hon. Mr. Ballantyne, March 15, 1920. *Not printed.*

45. Copy of the International Opium Convention, signed at The Hague, January 23, 1912, and ratified January 10, 1920. Presented by Hon. Mr. Rowell, March 2, 1920 *Not printed.*

46. Copy of an Agreement between His Majesty the King and the Grand Trunk Railway Company of Canada. Presented by Hon. Mr. Reid, March 2, 1920 *Not printed.*

47. Copy of Order in Council, P.C. 2596, dated 31st December, 1919—Air Regulations, 1920. Presented by Hon. Mr. Sifton, March 2, 1920 *Not printed.*

47*a*. Report of the Air Board, for the fiscal year ending March 31, 1920. Presented by Hon. Mr. Sifton, April 20, 1920. *Not printed.*

47*b*. Copy of Order in Council, P.C. 826, dated 19th April, 1920, respecting the reorganization of the Air Board. Presented by Hon. Mr. Sifton, April 20, 1920. *Not printed.*

48. Copy of correspondence in respect to the resignation of the Chief Commissioner of the Board of Commerce. Presented by Sir George Foster, March 2, 1920 *Not printed.*

48*a*. Copy of correspondence relating to the resignation of Judge Robson as Chairman of the Board of Commerce of Canada. Presented by Sir Robert Borden, June 26, 1920. *Not printed.*

49. Statement supplementary to that of 13th September, 1919, of Superannuation and Retiring Allowances in the Civil Service between the said date and the 31st December, 1919, showing name, rank, salary, service allowance and cause of retirement of each person superannuated or retired, also whether the vacancy has been filled by promotion, or by appointment, and the salary of any new appointee. Presented by Sir Henry Drayton, March 2, 1920 *Not printed.*

49*a*. Return to an Order of the House of the 22nd March, 1920, for a Return showing the cases in which, from October 1, 1896, to the present, in the computation of superannuation allowances to retiring officials, additional years were allowed under the provisions of Section 12, of Chapter 7, R.S., the dates of the granting of the allowances, the names of the officials and the number of years added to the actual service; along with a copy of all Treasury Board Reports and Orders in Council relating to such cases. Presented March 31, 1920, Mr. Fielding *Not printed.*

50. Statement in pursuance of Section 17 of the Civil Service Insurance Act, for the year ending March 31, 1919. Presented by Sir Henry Drayton, March 2, 1920 *Not printed.*

51. Statement of Governor General's Warrants issued since the last Session of Parliament on account of 1919-20. Presented by Sir Henry Drayton, March 2, 1920 *Not printed.*

52. Statement of Expenditure on account of "Miscellaneous Unforeseen Expenses," from the 1st September, 1919, to the 1st March, 1920, in accordance with the Appropriation Act Number (1), 1919. Presented by Sir Henry Drayton, March 20, 1920 *Not printed.*

53. Statement of Temporary Loans issued by the Government of Canada since the last Session of Parliament still outstanding. Presented by Sir Henry Drayton, March 2, 1920 *Not printed.*

54. Statement of Receipts and Expenditures of the National Battlefields Commission to 31st March, 1919. Presented by Sir Henry Drayton, March 2, 1920 *Not printed.*

54*a*. Statement of Receipts and Expenditures of the National Battlefields Commission to 31st March, 1920. Presented by Sir Henry Drayton, April 19, 1920 *Not printed.*

55. Report of the Ottawa Improvement Commission for the fiscal year ended March 31, 1919. Presented by Sir Henry Drayton, March 2, 1920 *Not printed.*

56. Statement of the Receipts and Expenditures of the Royal Society of Canada, for the year ended April 30, 1919. Presented by Sir Henry Drayton, March 2, 1920 *Not printed.*

57. Financial Statement of the affairs of the Montreal Turnpike Trust for the year ended December 31, 1919. Presented by Sir Henry Drayton, March 2, 1920 *Not printed.*

58. Copy of General Rules and Orders of the Exchequer Court of Canada, in accordance with the provisions of Section 88 of the Exchequer Court Act, Chapter 140, R.S.C. 1906. Presented by Hon. Mr. Sifton, March 10, 1920. *Not printed.*

58*a*. Copy of General Rules and Orders of the Exchequer Court of Canada, in accordance with the provisions of Section 88 of the Exchequer Court Act, Chapter 140, R.S.C. 1906. Presented by Hon. Mr. Sifton, April 14, 1920. *Not printed.*

59. Copy of the Rules of the Supreme Court of Nova Scotia enacted under the provisions of the Controverted Elections Act, Chapter 7, R.S.C. 1906, in accordance with the requirements of Section 85 of the Act. Presented by Hon. Mr. Sifton, March 10, 1920 *Not printed.*

Copy of the Crown Rules of the Judges of the Supreme Court of Nova Scotia in accordance with the provisions of Section 576, subsection 2, of the Criminal Code. Presented by Hon. Mr. Sifton, April 16, 1920. *Not printed.*

CONTENTS OF VOLUME 10—*Continued.*

60. Return showing the number of permits granted to take intoxicants into the Northwest Territories, for the year ending the 31st of December, 1919, in accordance with the provisions of the Revised Statutes, Chapter 62, Section 88. Presented March 10, 1920.. *Not printed.*

61. Report of Admiral of the Fleet, Viscount Jellicoe of Scapa, G.C.B., O.M., G.C.V.O., on Naval Mission to the Dominion of Canada (November-December, 1919). Presented by Hon. Mr. Ballantyne, March 10, 1920. *Printed for distribution to Senators and Members only.*

62. Return showing:—1. Number of postmasters in the County of Charlevoix-Montmorency. 2. Their names. 3. Their residence. 4. When they were appointed. 5. Their actual salary. 6. Whether it was ever increased since they were appointed. 7. If not, why. 8. If so, when, and to what extent. Presented March 10, 1920, Mr. Casgrain. *Not printed.*

63. Order of the House for a Return showing:—1. Number of mail carriers in the County of Charlevoix-Montmorency. 2. Their names. 3. Their residence. 4 When they were appointed. 5. Their actual salary. 6. Whether it was ever increased since they were appointed. 7. If not, why. 8. If so, when, and to what extent. Presented March 10, 1920, Mr. Casgrain *Not printed.*

64. Return to an Order of the Senate, dated September 30, 1919, for a statement giving weights and values of the exportation from Canada during the fiscal years of 1916-17-18-19 of mixed fertilizers, also of Sulphate of Ammonia, Nitrate of Soda, Ammoniates, Phosphate Rock, Super Phosphates, Kanite of Potash Salts, Chloride of Potash and Crude Sulphate of Potash, and of any miscellaneous chemicals as are used in the manufacture of artificial fertilizers also Basic Slag from the Provinces of Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, by each province, and where exported to as showa by clearances of the various Custom Houses. The Senate. *Not printed.*

65. Return to an humble Address of the Senate to His Excellency the Governor General, dated May 8, 1919, showing the date and object of all commissions appointed by the Government since its accession to power in 1911, up to the present date; the number of days during which each of the said commissions sat; the names of the persons composing the said commissions and the cost of each of these commissions to the country. The Senate. *Not printed.*

65*a*. Return to an Order of the Senate, dated September 5, 1919, showing:—The number of commissions appointed since 1912, their object, the names of their members and their salaries, the total cost of each commission and those which are still existing. The Senate.. *Not printed.*

65*b*. Return to an Order of the House of the 30th April, 1919, for a Return showing:—1. The number of commissons appointed by the Government since the year 1914, to date, and the purpose for which each was appointed. 2. The number of members on each of said commissions, and their names. Presented March 18, 1920. Mr. Prevost. *Not printed.*

65*c*. Return to an Order of the House of the 19th June, 1919, for a Return showing:—1. How many commissions have been appointed by the Governor in Council and by Parliament since the year 1911. 2. The names of the various commissions and the names of the members of the said commissions. 3. The amount of salary and travelling expenses paid to each commission and the sum drawn by each commissioner. Presented March 18, 1920. Mr. Michaud *Printed for distribution to Senators and Members only.*

66. Copy of Report of the Royal Commission on Indian Affairs for the Province of British Columbia. Presented by Sir George Foster, March 11, 1920 *Not printed.*

67. Report of the Royal Commission appointed to inquire into and concerning the conditions pertaining to running race meets and betting in connection therewith, in Canada. Also copy of the evidence taken before the Royal Commission appointed to inquire into and concerning the conditions pertaining to running race meets and betting in connection therewith, in Canada. Presented by Sir George Foster, March 16, 1920. *Printed for Members and Senators only.*

68. Return to an Address to His Excellency the Governor General of the 19th March, 1919, for a copy of the Order in Council appointing the Board of Grain Supervisors for Canada. Presented March 12, 1920. Mr. Stevens. *Not printed.*

69. Detailed Statement of Bonds or Securities registered in the Department of the Secretary of State since February 26, 1919. The Senate *Not printed.*

70. Return to an Order of the House showing:—1. How many Acting Ministers have been named or appointed since December 17, 1917. 2. Their names and in what Department they have administered as Acting Minister. 3. On what date each Minister was so appointed. Presented March 15, 1920. Mr. Tobin.. *Not printed.*

71. Copy of correspondence relating to the resignation of Hon. A. K. Maclean, and Hon. S. C. Mewburn, Minister of Militia and Defence, as Members of the Government of Canada. Presented by Sir George Foster, March 15, 1920. *Not printed.*

72. "The Forest Reserves and Parks Act." Presented by Hon. Mr. Meighen, March 16, 1920 *Not printed.*

73. Return of Orders in Council which have been published in the *Canada Gazette* and in the British Columbia *Gazette*, between 1st August, 1919, and the 5th February, 1920, in accordance with provisions of Sub-section (*d*) of Section 38 of the regulations for the survey, administration, disposal and management of Dominion Lands within the 40-mile Railway Belt in the Province of British Columbia. Presented by Hon. Mr. Meighen, March 16, 1920. *Not printed.*

74. Return of Orders in Council which have been published in the *Canada Gazette*, between the 1st August, 1919, and the 5th February, 1920, in accordance with the provisions of Section 5 of "The Dominion Lands Survey Act," Chapter 21, 7-8 Edward VII. Presented by Hon. Mr. Meighen, March 16, 1920 *Not printed.*

75. Return to Orders in Council which have been published in the *Canada Gazette*, between 1st August, 1919, and the 5th February, 1920, in accordance with the provisions of Section 77 of "The Dominion Lands Act," Chapter 20, 7-8 Edward VII. Presented by Hon. Mr. Meighen, March 16, 1920 *Not printed.*

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76. Copy of Order in Council, P.C. 198, dated 29th day of January, 1920—Defining the standard of Canadian silver coinage. Presented by Sir Henry Drayton, March 16, 1920. ..... *Not printed.*

77. Return to an Order of the House of the 8th October, 1919, for a copy of the correspondence exchanged between the firm of Becker and Company, Ltd., London, England, and the High Commissioner of Canada in London, concerning a certain circular issued by the Canadian Mission. Presented by Sir George Foster, March 17, 1920. *Not printed.*

78. Copies of Orders in Council, P.C. 1445, dated 17th July, 1919; P.C. 1955, dated 18th September, 1919; and P.C. 2562, dated 24th December, 1919, together with copy of letter addressed to the Chairman of the Canadian Section of the International Joint Commission, dated 21st January, 1920, relating to the development and use of the waters of the St. Lawrence river forming the boundaries between the United States and Canada. Presented by Hon. Mr. Rowell, March 18, 1920 ..... *Not printed.*

79. Return to an Order of the House of the 12th May, 1919, for a copy of all reports, letters, memoranda, telegrams, plans and estimates in connection with the construction of a bridge over the river Batiscan, in the parish of St. François-Xavier de Batiscan, Champlain County. Presented March 18, 1920. Mr. Deslauriers..... ..... *Not printed.*

79a. Return to an Order of the House of the 12th April, 1920, for a copy of all reports, letters, memos, correspondence, plans and specifications relative to the construction of a bridge on the Batiscan river, in the parish of St. François-Xavier of Batiscan, in the County of Champlain. Presented by Hon. Mr. Reid, April 26, 1920. ..... *Not printed.*

80. Return to an Order of the House of the 29th September, 1919, for a copy of all letters, plans and contracts between the Government or the Commission of the Transcontinental and the Canadian Pacific Railway Company, concerning (*a*) the construction, by this Company, of a railway station at "The Palais" in the City of Quebec; (*b*) the conditions of exploitations of the said station by the Transcontinental Railway Company or by the National Railways, and also any Orders in Council in this connection. Presented March 18, 1920. Mr. *Not printed.*

81. Return to an Order of the House of the 29th September, 1919, for a copy of all correspondence and other papers and documents in the possession of the Government or of the Civil Service Commission relating to the appointment of a Harbour Master for the Port of Canso, N.S. Presented March 18, 1920. Mr. Sinclair (Antigonish). *Not printed.*

82. Return to an Order of the House of the 29th September, 1919, for a copy of all correspondence relating to the dismissal of James Couner from the dual positions which he held at Snowflake, Manitoba, under the Department of Customs, and Immigration and Colonization. Presented March 18, 1920. Mr. Richardson ..... *Not printed.*

83. Detailed Statement of Remissions of Customs Duties and the Refund thereof, under Section 92, Consolidated Revenue and Audit Act, through the Department of Customs, for the fiscal year ended 31st March, 1918. Presented by Hon. Mr. Sifton March 18, 1920. ..... *Not printed.*

84. Return to an Order of the House of the 29th September, 1919, for a copy of all documents, letters and plans, exchanged between the Government and any person, commission or company concerning the construction, in the City of Quebec, or in the suburbs, of a tunnel to facilitate the entrance of the Transcontinental or of any other company in the said city. Presented March 18, 1920. Mr. Parent..... *Not printed.*

85. Return to an Order of the House of the 22nd September, 1919, for a Return showing the total number of persons of both sexes now employed by the Federal Government of the Dominion of Canada. Presented March 18, 1920. Mr. Tobin ..... *Not printed.*

86. Return to an Order of the House of the 10th March, 1920, for a copy of the contract between the Government of Canada or the Canadian Wheat Board and Greece, for 12,000,000 bushels of wheat. Presented March 18, 1920. Mr. Archambault..... *Not printed.*

87. Return to an Order of the House of the 10th November, 1919, for a copy of all correspondence, telegrams and other documents exchanged between the Federal Government and the Government of New Brunswick with regard to the transfer of wharves on the St. John river and tributary waters, including a copy of all correspondence regarding the liability of the Dominion Government in maintaining and repairing these wharves. And Return to an Order of the House of the 10th November, 1919, for a copy of all reports and recommendations made by the officers of the Department of Public Works during the years 1918-1919, on the condition of the wharves in the St. John river and tributary waters, and the repairs required thereto. Presented March 18, 1920. Mr. McLean (Royal)..... *Not printed.*

88. Return to an Order of the House of the 29th September, 1919, for a copy of all documents, letters and plans passed between the Government and the City of Quebec or any other corporation or construction and transport company or any other person, concerning the construction or the non-construction of a dam on the St. Charles river, in the City of Quebec. Presented March 18, 1920. Mr. Parent..... *Not printed.*

89. Return to an Order of the House of the 10th March, 1920, for a Return showing the total amount of Canadian securities previously held in Great Britain, and sold to the United States, with the amount of interest now payable by this Dominion to the United States to replace amount formerly paid to Great Britain. Also a copy of all correspondence relating to this matter. Presented March 18, 1920. Mr. Devlin ..... *Not printed.*

90. Return to an Order of the House of the 11th March, 1920, for a copy of all correspondence, agreements and contracts, between the Government and any banks touching the payment of officers and men in the Canadian Expeditionary Forces, especially as regards the rates of exchange prevailing between Canadian and British currency and the manner in which the same affected the pay of said officers and men, together with copies of all departmental or other Government orders or regulations dealing with the subject of soldiers' pay and the effect of fluctuations of exchange thereon. Presented March 22, 1920. Mr. McMaster ..... *Not printed.*

91. Return to an Order of the House of the 11th March, 1920, for a Return showing:—1. The number of officers being retained in the service of the Militia Department at Headquarters at Ottawa who have not seen service overseas. 2. Their names, positions, salaries and length of time in the service, respectively. 3. Whether returned men are available for those positions. Presented March 22, 1920. Mr. McKenzie. ..... *Not printed.*

CONTENTS OF VOLUME 10—*Continued.*

91a. Return to an Order of the House of the 29th March, 1920, for a Return giving a list of the names of all the officers employed at the Headquarters of the Militia Department, at Ottawa, their respective salaries the date of their appointment and the length of their services in the Canadian Expeditionary Force. Presented June 8, 1920. Mr. Archambault ..... *Not printed.*

92. Return showing:—1. Names of the tenderers for the works to be done at the following places in the County of Montmorency, Quebec: Ste. Anne de Beaupre, Ste. Famille-Ile d'Orleans, St. François du Sud-Ile d'Orleans, St. Jean-Isle d'Orleans, Ile de la Quarantine, Pointe aux Trembles. 2. Where they reside. 3. Amount of each tender. 4. Who the successful tenderers were. 5. Whether the said works have been started. 6. When they will be completed. Presented March 22, 1920. Mr. Casgrain. ..... *Not printed.*

93. Orders in Council relating to the organization and work of the Department of Health, as follows:—1. Order in Council, P.C. 1627, dated August 2, 1919, naming the President of the Privy Council as the Minister of the Crown to preside over the Department of Health and providing for the transfer to the Department of Health from the Department of Immigration and Colonization of the staff of the Quarantine and Medical Service. 2. Order in Council, P.C. 1765, dated August 23, 1919, transferring to the Department of Health from the Department of Trade and Commerce the administration of the Adulteration Act, the Proprietary or Patent Medicine Act, the Commercial Feeding Stuffs Act and the Fertilizers Act. 3. Order in Council, P.C. 2204, dated October 30, 1919, transferring to the Department of Health the work of the Housing Committee of the Cabinet. 4. Order in Council, P.C. 2321, dated November 21, 1919, transferring to the Department of Health from the Department of Marine and Fisheries, the administration of Marine Hospitals. 5. Order in Council, P.C. 2612, dated December 31, 1919, transferring to the Department of Health the Medical Branch of the Commission of Conservation. Presented by Hon. Mr. Rowell, March 24, 1920. ..... *Not printed.*

93a. Order in Council, P.C. 1961, dated September 29, 1919, covering the appointment of an Advisory Board as prescribed in the "Act to amend the Proprietary or Patent Medicine Act." Chapter 66, 9-10 George V. Order in Council, P.C. 2079, dated October 8, 1919, covering the appointment of the Dominion Council of Health. Order in Council, P.C. 328, dated February 11, 1920, accepting the resignation of the Hon. Walter R. Rollo as a Member of the Dominion Council of Health and appointing Mr. H. J. Halford, of Hamilton, Ontario, Vice-President of the Trades and Labour Congress of Canada, in Mr. Rollo's place. Presented by Hon. Mr. Rowell, March 25, 1920. *Not printed.*

94. Copies of General Orders promulgated to the Militia for the period between February 1, 1919, and February 2, 1920. Also,—Copies of all Routine Orders of the Canadian Expeditionary Force promulgated from February 22, 1919, to February 24, 1920. Presented by Hon. Mr. Guthrie, March 24, 1920. ..... *Not printed.*

95. Appointments, Promotions and Retirements, Canadian Militia and Canadian Expeditionary Force, from February 6, 1919, to January 22, 1920. Presented by Hon. Mr. Guthrie, March 24, 1920. ..... *Not printed.*

96. Return to an Order of the House of the 18th September, 1919, for a Return showing:—1. The total number of men who joined the Expeditionary Force for service in Siberia. 2. How many of such number voluntarily enlisted for service in Siberia. 3. Whether the Government is aware as to whether or not a considerable number of members of such Expeditionary Force were made to embark at Victoria, B.C., by compulsion and with the point of the bayonet directed at them. 4. Whether the Government is aware as to whether or not certain members of such Expeditionary Force who had not voluntarily enlisted for service in Siberia were court-martialed and sentenced to hard labour. If so, who such members are and what the nature of the sentence was. 5. The cost to the Government of the Expeditionary Force for service in Siberia. Presented March 25, 1920. Mr. Archambault ..... *Not printed.*

96a. Return to an Order of the House of the 7th April, 1920, for a copy of all correspondence, documents, and records including the evidence and judgments in connection with the trials held by Field General Court Martial of the 259th, of the Canadian Expeditionary Force in Siberia, on the following Riflemen, sentenced on the 28th of January, 1919: Alfred Laplante, O. Boisvert, Edmood Leroux, Joseph Guenard, E. Pauze and Arthur Roy. Presented May 18, 1920. Mr. Archambault. ..... *Not printed.*

97. Return to an Order of the House of the 17th March, 1920, for a Return showing:—1. Whether any work has been done on any of the lines enumerated in the Second Schedule of Chap. 13, 9-10, George V, being an Act to incorporate the Canadian National Railway Company and respecting Canadian National Railways. 2. If so, on what particular line the work has been done. 3. What kind of work has been done. 4. How much money has been expended for this work. 5. How much in construction. In surveys. In expropriation, and the purchase of the Right of Way. 6. How many station sites have been located on said lines, what the name is of each station, and on what particular line. 7. Description of the land upon which it is located. How much was paid for said station site, and who was representing the Government or the Canadian National Railways in negotiating the purchase. 8. If moneys were paid for any of such sites, to what appropriation they were charged, and on whose order they were paid. 9. Whether any Order in Council has been passed entrusting said company with the management and operation of the Grand Trunk Pacific and the Intercolonial Railways. Presented March 25, 1920. Mr. Bureau. ..... *Not printed.*

98. Return to an Order of the House of the 18th March, 1920, for a copy of all representations, complaints and other correspondence filed with the Civil Service Commission regarding Classification of the Civil Service of Canada. Presented March 26, 1920. Mr. Fripp ..... *Not printed.*

98a. Return to an Order of the House of the 12th April, 1920 for a Return showing:—1. Number of classification engineers employed in connection with the Civil Service. 2. Total amount paid to classification engineers to date in connection with the work of classifying the Civil Service. 3. Further estimate required to complete the work. Presented April 29, 1920. Mr. Sinclair (Antigonish.) ..... *Not printed.*

99. Return to an Order of the House of the 10th March, 1920, for a copy of all correspondence relating to the appointment of the Postmaster at Metabetchouan, Quebec. Presented March 29, 1920. Mr. Savard ..... *Not printed.*

100. Draft Conventions and Recommendations adopted by the International Labour Conference at Washington and communicated to the Government by the Secretary-General of the League of Nations pursuant to Article 405, Treaty of Versailles:—1. Draft Convention limiting the hours of work in industrial undertakings to eight in the day and forty-eight in the week. 2. Draft Convention concerning unemployment. 3. Recommendation concerning unemployment. 4. Recommendation concerning reciprocity of treatment of foreign workers. 5. Draft Convention concerning the employment of women before and after childbirth. 6. Draft Convention concerning the employment of women during the night. 7. Recommendation concerning the prevention of anthrax. 8. Recom-

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mendation concerning the protection of women and children against lead poisoning. 9. Recommendation concerning the establishment of Government Health Services. 10. Draft Convention fixing the minimum age for admission of children to industrial employment. 11. Draft Convention concerning the night work of young persons employed in industry. 12. Recommendation concerning the application of the Berne Convention of 1906, on the prohibition of the use of white phosphorus in the manufacture of matches. Presented by Hon. Mr. Rowell, March 29, 1920 *Not printed.*

100a. Return showing:—1. Names of the Canadian representatives at the International Labour Conference last fall. 2. Amount expended in connection with this delegation. 3. Names of Canadian representatives at the Labour Conference at Paris. 4. Amount expended in relation thereto. Presented March 29, 1920. Mr. Archambault *Not printed.*

101. Return to an Order of the House of the 18th March, 1920, for a Return showing:—1. On what date a Branch of the Public Works Department was first established at Antigonish, N.S. 2. What counties in Nova Scotia were originally under the jurisdiction of the Antigonish Branch. 3. When the North Sydney office was established. 4. Names of the employees in the Antigonish Branch prior to the change and the amount of their yearly salaries. 5. Names of the employees in both offices on December 31, 1914, and their yearly salaries. 6. Names of the present employees in both branches and their respective yearly salaries. 7. How much was expended in public works in the area under the jurisdiction of the Antigonish Branch for five years prior to December 31, 1911. 8. How much was expended in public works in the area covered by both the Antigonish and North Sydney Branches during the five years subsequent to January 1, 1912. Presented March 29, 1920. Mr. Sinclair (Antigonish) *Not printed.*

101a. Return showing the details of the expenditure of $1,372,079 82 made in the area covered by both the Antigonish and North Sydney Branches of the Department of Public Works during the five years subsequent to January 1, 1912. Presented April 7, 1920. Mr. Sinclair (Antigonish.). *Not printed.*

102. Return to an Order of the House of the 22nd of March, 1920, for a copy of all correspondence relating to the public cross-road between Ste.-Catherine and Tadoussac. Presented March 29, 1920. Mr. Savard. *Not printed.*

103. Return to an Order of the House of the 29th March, 1920, for a Return showing:—(*a*) the total production of coal in Canada during the past ten years (*b*) how much of said coal was aathracite (*c*) the total importatioa of coal into Canada during the same period (*d*) how much of same was anthracite (*e*) the total exportation of coal from Canada during the past ten years and (*f*) bow much of this total was anthracite. Presented March 31, 1920. Mr. Archambault *Not printed.*

104. Return to an Order of the House of the 10th March, 1920, for a Return showing:—1. What amount of money has been expended by the Government during the years 1918–19–20 in providing seed grain for settlers in the Lethbridge and Calgary land districts respectively. 2. What amouat of money has been expended by the Governmeat as its share of the freight charges in providing feed for live stock in Southern Alberta in the years 1918–19–20. Presented April 6, 1920. Mr. Buchanan. *Not printed.*

105. Return to an Order of the House of the 15th March, 1920, for a Return showing for each of the fiscal years 1891, 1896, 1901, 1906, 1911, 1914, 1915, 1916, 1917, 1918, 1919 and estimated 1920 (*a*) Total revenue of the Dominion (*b*) Expenditure chargeable to Consolidated Fund (*c*) Expenditure chargeable to capital (*d*) Total expenditure (*e*) Estimated population (*f*) Total reveaue per head of population (*g*) Expenditure per head chargeable to Consolidated Fund, and (*h*) Total expeaditure per bead. Presented March 6, 1920. Mr. Fielding. *Not printed.*

106. Return to an Order of the House of the 22nd March, 1920, for a Return showag:—1. The total amouat of the gross consolidated debt of Canada on the 28th of February, 1920. 2. Total amount of the net consolidated debt of Canada on the same date. 3. Total amount of the assets of the consolidated debt of Canada on the said date. 4. Total amount of the yearly interest payable on the gross consolidated debt of Canada on the said date. 5. Total amount of yearly interest or revenue received or collected by Canada in respect to the property or securities constituting the assets of the public debt. 6. Total amount of the floating debt of Canada on the 28th of February, 1920. 7. Total amount of yearly interest payable on the floating debt of Canada on the said date. Presented April 6, 1920. Mr. Parent. *Not printed.*

107. Return to an Order of the House of the 24th March, 1920, for a copy of the correspondence between the Minister of Lands and Forests of the Province of Quebec and the Soldiers' Settlement Board. Presented April 6, 1920. Mr. Gauvreau *Not printed.*

108. Return showing:—1. What loans have been negotiated by the Dominion Government since 1911. 2. The distinctive name of each loaa and its amount. 3. Of the said loans, which were (*a*) foreign, (*b*) British, and (c) Canadian. Presented April 7, 1920. Mr. Casgrain *Not printed.*

109. Return to an Order of the House of the 19th March, 1919, for a return showing the total cost and general expense of the 1918 Victory Loan, including detailed statements of the amounts paid to brokers, banks, newspapers, advertising agencies, and all other persons, corporations, firms and agencies to whom payments were made, giving the names of such persons, baaks, newspapers, agencies or firms in each case. Presented April 7, 1920. Mr. Blake. *Not printed.*

110. Report of the Explosives Division of the Department of Mines for the year 1919. The Senate *Not printed.*

111. Return to an Order of the House of the 22nd March, 1920, for a Return showing the number of persons or corporations paying and the aggregate amount paid by each group by way of Dominion Income Tax in the City of Toronto during the fiscal years 1917 and 1918 whose assessed income was over $1,500, $6,000, $10,000, $20,000, $30,000, $50,000, $100,000. Presented April 12, 1920. Mr. Kennedy. *Not printed.*

112. Return showing:—1. Number of post offices on the north shore of the St. Lawrence from Tadoussac to Esquimaux Point. 2. Names, postal addresses and the date of appointmeat of each of these postmasters. Presented April 12, 1920. Mr. Savard *Not printed.*

113. Return to an Order of the House of the 25th March, 1920, for a Return showing how many houses have been commeaced, and how many finished, under the legislation of a year ago. Presented April 13, 1920. Mr. Clark (Red Deer). *Not printed.*

114. Copy of Resolutions of thanks passed by the British House of Commons to the Forces engaged in the late War, and embodying thanks to the troops from the Dominions overseas for their services during the said war. Presented by Hon. Mr. Rowell, April 13, 1920 *Not printed.*

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115. Return to an Order of the House of the 31st March, 1920, for a copy of all correspondence, Orders in Council, reports and all other documents respecting the apportionment of expenses on the League of Nations and the payment of the sum of $64,043 15 on February 13th, 1920, as Canada's share of such expense. Presented April 13, 1920. Mr. Fielding *Not printed.*

116. Return to an Order of the House of the 15th March, 1920, for a copy of all papers, documents, telegrams, correspondence and reports made between the Department of Naval Service and the Inspector of Fisheries in Prince Edward Island or any other party or parties regarding the sale of the lobster hatchery at Charlottetown, P.E.I. Presented April 15, 1920. Mr. Sinclair (P.E.I.) *Not printed.*

117. Return to an Order of the House of the 19th March, 1919, for a Return showing:—1. The number of vessels belonging to the Canadian Government in the Canadian Naval Service during the war. 2. Their names. 3. The number of vessels employed in the work of the Canadian Naval Service rented or chartered during the period of the war. 4. Their names. Presented April 15, 1920. Mr. Deslauriers *Not printed.*

118. Return to an Order of the House of the 24th March, 1919, for a Return showing the number of commutation of sentences accorded by the Department of Justice to prisoners condemned to be hanged, where the crimes were committed, and the sentence imposed after commutation, within the last four years. Presented April 15, 1920. Mr. Casgrain. *Not printed*

119. Return to an Order of the House of the 10th March, 1920, for a Return showing:—1. Number of persons discharged from the Government Printing Bureau and Department of Public Printing and Stationery from 1st January, 1919, to 1st March, 1920. 2. Upon whose recommendation and report dismissals were made. 3. Whether the King's Printer or Assistant King's Printer recommended the persons to be dismissed. 4. Whether the report of dismissal was in writing. 5. What qualifications the person or persons had who investigated the respective cases for dismissal, what investigation was made by them and whether their conclusions are reduced to writing. Presented April 15, 1920. Mr. Fripp.. *Not printed.*

120. Return to an Order of the House of the 24th March, 1920, for a copy of all letters, telegrams, correspondence, and other papers in the possession of the Government, in connection with the transfer of mail bags from the C.P.R. mail car to the mail car of the Quebec, Montreal and Southern Railway Company, and from the latter to the former, at Iberville Junction, during the period extending from the month of November, 1917, to the month of April, 1918. Presented April 16, 1920. Mr. Demers *Not printed.*

121. Return to an Order of the House of the 31st March, 1920, for a copy of all telegrams, papers, letters and correspondence with reference to the application for naturalization of Professor F. V. Riethdorf, alias Frederick Edwards, 205 Scott Block, Winnipeg, also for copies of all correspondence to date with reference to the resignation of the said F. V. Riethdorf, alias Frederick Edwards, from the employ of the Department of State and in particular correspondence with the President of the Privy Council, Controller McLean and Mr. A. Brophy of the said Department. Presented April 16, 1920. Mr. Power *Not printed.*

122. Return to an Order of the House of the 22nd March, 1920, for a Return showing:—1. Number of chartered banks in Canada in 1880. 2. Number of chartered banks in Canada at the present time. 3. What profits, as shown by their annual statements, were made by each of the chartered banks in the years 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918 and 1919. 4. What taxes each paid to the Federal Treasury in each of the above years. 5. What amount, not being interest on money borrowed, the Federal Government paid to each chartered bank in each of the years 1914, 1915, 1916, 1917, 1918 and 1919 for service rendered. 6. The paid up capital of each bank, and its reserve. Presented April 16, 1920. Mr. Ross. *Not printed.*

123. Copy of all correspondence, papers, documents and telegrams, concerning the amelioration of conditions among the Indians and Eskimos inhabiting the east coast of James and Hudson Bays, from East Main River in the south to Hudson Straits in the north, showing what has been and is being done to provide emergency relief, medical attention, administration of Justice, industrial training, introduction of reindeer treaty rights, securing of adequate prices for their furs, and any other matter in the interests of these people. The Senate *Not printed.*

124. Return to an Order of the House of the 15th April, 1920, for a Return showing:—1. What the value in Canadian currency of the British pound sterling was on the first of the months of November and December, 1914, on the first of all the months of the years 1915, 1916, 1917, 1918, and on the first of January and February, 1919. 2. During the years 1914, 1915, 1916, 1917 and 1918, whether the officers and men of the Canadian Expeditionary Force were paid in accordance with the rates of exchange prevailing at the various times at which payments were made to them, and if not, at what rate or rates. 3. What was done in this respect with payments made to interned Canadian soldiers, and at what rate or rates their pay was converted into the currencies of the countries in which they were interned. Presented April 19, 1920. Mr. McMaster *Not printed.*

125. Return to an Order of the House of the 12th April, 1920, for a Return showing:—1. How much, if any, of the Federal Emergency Fund for the re-establishment of the returned soldier was overpaid or inadvertently paid to those not entitled to it under the regulations. 2. How much of this amount has been recovered. 3. How many prosecutions have been instituted for this recovery. 4. What the decision has been in each case. 5. Whether it is the intention of the Government to undertake any further action in cases of this nature. Presented April 19, 1920. Mr. Chisholm *Not printed*

126. Return to an Order of the House of the 12th May, 1919, for a Return showing:—1. Whether prosecutions were authorized by the Government against parties in the Province of Nova Scotia for neglecting to place War Revenue Stamps upon packages of Proprietary or Patent Medicine before the sale thereof, as required by the War Revenue Act, 1915. 2. Person or persons appointed to institute these prosecutions. 3. Number of prosecutions, if any brought. 4 Names of solicitors designated by the Government to conduct them. 5. Terms of said solicitors' appointment. 6. Gross amount of fines imposed. 7. In what counties in Nova Scotia such prosecutions were brought. 8. Who recommended the appointment of such Prosecutors and Solicitors. Presented April 19, 1920. Mr. Sinclair (Antigonish). *Not printed.*

127. Copy of Order in Council P.C. 395, dated 18th February, 1920, in respect to the organization of an Air Force in Canada. Presented by Hon. Mr. Sifton, April 19, 1920 *Not printed.*

128. Return showing:—1. For what purposes the special Trade Commission of the overseas branch of the Department of Trade and Commerce has been created, and how the purposes are to be accomplished 2. Who is in charge thereof, and his salary. 3. If publicity for Canadian production is sought, who has received the appointment

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of publicity expert, and what the proposed remuneration is for such. 4. What sums, annually or otherwise, are paid by Canada to the British newspaper known as *Canada*, and what sums to the *Canada Gazette*? Presented April 19, 1920. Mr. McMaster . . . *Not printed.*

129. Return to an Order of the House of the 7th April, 1919, for a copy of the correspondence exchanged between F. X. Gagnon, Port Daniel East, Quebec, and the Department of Justice, regarding the Military Exemption Tribunal which sat at that place. Presented April 20, 1920. Mr. Marcil (Bonaventure) . . *Not printed.*

130. Return to an Order of the House of the 29th September, 1919, for a copy of all telegrams, letters, contracts and plans, passed between the Commission of the Transcontinental Railway, or the Government and the City of Quebec, the different transport companies, the Harbour Commission of Quebec or any other persons, corporations or companies from 1910 to date, concerning the construction of a railway station at the Champlain Market in the city of Quebec, also the construction, in the said city, of wharves, docks, elevators to facilitate the transport of grain from the West via the Port of Quebec. Presented April 20, 1920. Mr. Parent . . *Not printed.*

130a. Return to an Order of the House of the 5th May, 1920, for a copy of all documents, contracts and correspondence relating to the negotiations between the City of Quebec and the Transcontinental Railway regarding the Champlain market site and the proposed docks and grain elevators situated along the front of the St. Lawrence river, Quebec. Presented May 18, 1920. Mr. Power . . . *Not printed.*

131. Return to an Order of the House of the 29th September, 1919, for a copy of all documents, letters, and plans, submitted by the Harbour Commission of Quebec since 1910 to date, concerning the construction of wharves, docks elevators, cold storage, terminal facilities in the Port of Quebec, for the transport by land and water. Presented April 21, 1920. Mr. Parent . . . . . *Not printed.*

132. Return showing:—1. Minimum and maximum salary being paid to postmasters. 2. By what method the minimum and maximum salary of postmasters is determined. 3. Whether postmasters receive a bonus on account of the high cost of living. 4. If not, why. 5. Minimum and maximum salary being paid to rural mail carriers. 6. Whether the Government has fixed a maximum rate per mile to apply to rural mail routes. 7. How the salary of rural mail carriers is determined. 8. Whether rural mail carriers receive a bonus on account of the high cost of living. 9. If not, why. 10. Minimum and maximum salary being paid to letter carriers. 11. Whether letter carriers receive a bonus. 12. If so, how much. Presented April 21, 1920. Mr. Kennedy (Glengarry.) *Not printed.*

133. Return showing:—1. Number of persons employed in the province of Quebec in connection with the work of the Soldiers' Settlement Board. 2. Their names and post office addresses. 3. Salary or remuneration each one is drawing. 4. Whether any of these employees are allotted to certain constituencies. 5. If so, what persons are allotted to the various constituencies, and to what constituencies. Presented April 26, 1920. Mr. Tobin. *Not printed.*

134. Return to an Order of the House of the 31st March, 1920, for a copy of all letters, telegrams and other correspondence that has passed between one George Carvill, of the City of St. John, formerly City Ticket Agent for the Canadian Government Railway (formerly Intercolonial Railway) at the said City of St. John, and any and all others for and on behalf of the said George Carvill and the Minister of Railways and Canals, Deputy Minister or any other Ministers of the Government or any general manager, assistant manager, superintendent or other officials of the Canadian Government Railway in reference to the dismissal of the said George Carvill from said railway on the 30th day of April, A.D. 1917, and the request of the said George Carvill for an investigation under onth before an independent tribunal into the causes for his dismissal and the refusal of the management of the said railway to grant such an investigation. Presented April 27, 1920. Mr. Copp . . . . . *Not printed.*

135. Return to an Order of the House of the 22nd March, 1920, for a copy of all documents, letters, telegrams and other correspondence in the hands of the Government concerning the proposed railway between St. Camille, County of Bellechasse, and Cabano, County of Temiscouata. Presented April 27, 1920. Mr. Fufard . . . . *Not printed.*

136. Return to an Order of the House of the 22nd March, 1920, for a copy of the Report made by the Board of Railway Commissioners for Canada, on the application of the Canadian Pacific and Grand Trunk Railway Companies, on behalf of themselves and other railways carrying His Majesty's mail in Canada, asking that fair and reasonable rates be fixed by the Board for the carriage of mails pursuant to the reference of the matter to the Board by Order in Council, P.C., 617, dated March 7, 1917, for the determination as to the accuracy or inaccuracy of the claim made by the railway companies, that these rates are inadequate, and, if it is found that the present rates are inadequate to determine as the result of evidence to be submitted by the Post Office Department and the railway companies interested what would be a fair rate of payment for the service. Also a copy of all correspondence between members of the Government or any officials thereof and the Board of Railway Commissioners or any officials thereof in reference to the report mentioned above. Presented April 27, 1920. Mr. Burcau. *Not printed.*

136a. Return to an Order of the Senate dated April 28, 1920, for a Return of the evidence and other proceedings submitted before the Dominion Railway Commission at the sessions at Ottawa on October 3, 1911, November 7, 1911, and March 18, 1919, relating to freight rates and all matters before said Board on said rates. 2. A copy of the report made by said Board to the Government as the result of said investigations. 3. A copy of the postal rate agreement or agreements existing between the Government and the railway companies for parcel post service, including a statement or copy of the rates charged by the Government railways. 4. A copy of the report made by the Dominion Railway Board to the Government on the contracts between the Government and the railway companies as to the rates charged for the postal services. 5. Does the said report show (or is the Government aware) that the rates fixed and paid are less than it cost the railway companies to perform the services. 6. What quantity of mail is carried annually by parcel post. 7. How much of it is carried for mail order houses—distinguishing quantities by provinces. 8. What are the postal rates charged for parcel post packages: (*a*) to the public (*b*) to mail order houses. 9. Do these rates pay the full cost of transportation. If not, what is the lose. 10. If there is a loss how is it provided for? 11. Does the Government intend to make a change in the parcel post rates. If so, what. The Senate. . . . . *Not printed.*

137. Return to an Order of the House of the 12th April, 1920, for a Return showing at the end of the fiscal year 1910, and each subsequent year, the total assets of Canada, the amount received in each year as interest or other income from such assets, and the average rate of interest or other income so received in each year. Presented April 28, 1920. Mr. Fielding . . . . . *Not printed.*

CONTENTS OF VOLUME 10—*Continued.*

158f Return, to an Order of the House of the 10th March, 1920, for a Return showing:—1. The total amount of commission charges paid to brokers and agents in connection with the last Victory Loan. 2. What amounts have been paid to each of the said brokers and agents. 3. Whether any of the said commission charges have not yet been paid. 4. If so, whose accounts they are, and for what reason they have not been paid. Presented April 28, 1920. Mr. Archambault ... *Not printed.*

139. Return showing:—1. Names of the so-called experts employed by the Arthur Young Company to classify the employees of the various departments, and which department or departments did each such expert classify. 2. The ages, nationality educational, and practical qualification, including positions previously held, with special reference to classification work, of each such expert. 3. (*a*) Cost to the Government for the services of each such expert; (*b*) what is the cost to the Arthur Young Company of the services of each expert. Have they been paid in Canadian or American money. 4. How many Deputy Ministers have approved the classification of their departments. 5. Whether the Arthur Young Company pay an income or business tax in Canada. 6. In case of difference of opinion respecting classification between the so-called experts and the Civil Service Commission whose opinion prevails. Presented April 28, 1920. M. Gauvreau ... *Not printed.*

140. Return to an Order of the House of the 14th April, 1920, for a copy of all reports, letters, petitions or documents referring to claims for damages on behalf of innocent victims who, during the so-called Quebec riots of 1918, have either been killed or wounded by the soldiers of His Majesty. Presented April 29, 1920. Mr. Parent. *Not printed.*

141. Return to an Order of the Senate dated April 18, 1918, for a Return showing:—The amount paid in each year since 1900 inclusive, for (*a*) reporting, (*b*) translating, (*c*) typewriting, and (*d*) printing proceedings before Commission of Inquiry and all other investigations for or on behalf of the Government or any Department thereof, in English and in French respectively, the names of the persons under (*a*), (*b*) and (*c*) to whom such payments were made, the amount paid to each as salary or other compensation, and the amount paid on account of each such person for travelling and living expenses. The Senate ... *Not printed.*

142. Return to an Order of the Senate, dated April 16, 1918, for a Return referring to Return of the Senate (No. 7, August 23, 1917, *re* officers 78th Regiment, Highlanders of Pictou County, Nova Scotia):—1. (*a*) Giving the names of the officers mentioned in the said Return who served with the overseas forces at the fighting front since said Return was compiled. (*b*) The unit and date each one so served. (*c*) The number who became casualties, and when. 2. The location, connection and rank of each of the officers mentioned in said Return in the overseas forces at the present time. The Senate ... *Not printed.*

142*a*. Supplementary Return to an Order of the Senate dated April 16, 1918, for a Return referring to Return of the Senate (No. 7, August 23, 1917, *re* officers 78th Regiment, Highlanders of Pictou County, Nova Scotia)—1. (*a*) Giving the names of the officers mentioned in the said Return who served with the overseas forces at the fighting front since said Return was compiled. (*b*) The unit and date each one so served. (*c*) The number who became casualties, and when. 2. The location, connection and rank of each of the officers mentioned in said Return in the overseas forces at the present time. The Senate ... *Not printed.*

143. Copy Declaration by the Supreme Council of the Peace Conference on the Economic Conditions of the World. The Senate ... *Not printed.*

144. Return showing: 1. Whether the Government pays the expenses of an office in Toronto for A. V. White, consulting engineer of the Conservation Commission. 2. If so, what expenses for said office it paid in the fiscal year 1919-20, including rent, salaries of assistants, travelling expenses, etc. 3. What relation, if any, the said A. V. White is to James White, Deputy Head of the Conservation Commission. 4. If any other relatives of its Deputy Head were employed by the Conservation Commission in the past fiscal year, their names, what positions they fill and what salaries were paid them. 5. Whether it is the practice of the Government to maintain offices for all its consulting engineers. 6. Whether it is the intention of the Government to continue to defray the expenses of the Toronto office of the said A. V. White. 7. If the said A. V. White was employed by the Department of Public Works, what was the last year he was so employed and what remuneration he was paid. 8. At what annual salary rate he is being paid by the Conservation Commission for 1920-21. 9. What reports, if any, by A. V. White, other than reports on water-powers and hydro-electric conditions, the Conservation Commission has published. 10. Whether A. V. White holds the degree of Electrical Engineer from a recognized university. 11. Name of the Hydro-Electric Engineer of the Conservation Commission. 12. What degrees he holds and what practical experience he has had. 13. What annual salary he is paid. Presented May 3, 1920. Mr. Casgrain. *Not printed.*

145. Return showing:—1. How many farms in each constituency in the province of Quebec were purchased by returned soldiers under the provisions of the Soldiers' Settlement Act. 2. The names of the buyers and sellers of each of the said farms. 3. The price paid for each of these farms. 4. Who visited each of the said farms on behalf of the Government. 5. What assistance was given by the Government in connection with each purchase. Presented May 3, 1920. Mr. Tobin ... *Not printed.*

146. Return to an Order of the House of the 19th April, 1920, for a Return showing:—1. Whether there was any printing done for the Government outside of the Printing Bureau during the years 1918/1919. 2. If so, by whom. 3. Addresses of persons or firms to whom such printing was given. 4. Amount paid for this outside printing, in each case, in 1918-19. Presented May 4, 1920. Mr. Dechesne ... *Not printed.*

147. Return to an Order of the House of the 19th April, 1920, for a Return showing:—1. Amounts loaned or credits given by the Government of Canada: (*a*) to Greece; (*b*) to Rumania. 2. The dates these loans were granted or credits given: (*a*) to Greece; (*b*) to Rumania. 3. The nature of merchandises purchased by the Government of Canada and charged in each case: (*a*) to Greece (*b*) to Rumania. 4. The names of commercial firms or persons from whom said goods were so purchased, specifying: (*a*) the nature of goods in each case (*b*) the amounts paid by the Government to these firms or persons in each case and also the date of these payments. Presented May 5, 1920. Mr. Archambault ... *Not printed.*

148. Return to an Order of the House of the 10th March, 1920, for a copy of all telegrams, petitions, letters and documents of all kinds sent to the Post Office Department referring in any way to the mail route and mail service between Mabou, N.S., and Whycocomagh, N.S. Presented May 5, 1920. Mr. Chisholm ... *Not printed.*

CONTENTS OF VOLUME 10—*Continued.*

149. Return to an Order of the House of the 31st March, 1920, for a copy of all correspondence, reports and otn. in any way referring to a proposed change in the site of Beatonville Post Office, Inverness County, N.S. May 5, 1920. Mr. Chisholm .. ..No.

150. Return showing:—1. How many persons are employed on the staff of the Civil Service Commission. 2. Their name 3. The respective salaries of said persons. Presented May 6, 1920. Mr. Hocken *Not printed.*

151. Return to an Order of the House of the 26th April, 1920, for a return showing the total quantity in gallons, of spirituous liquors imported into Canada during the years 1913, 1914, 1915, 1916, 1917, 1918 and 1919; and also showing the value in money of the said imports during the same years. Presented May 10, 1920. Mr. Archambault *Not printed.*

152. Return to an Order of the House of the 3rd May, 1920, for a copy of all correspondence and reports concerning the dismissal of Mr. Elisée Parent, inspector of Inland Revenue, the 6th of September, 1916 (file No. 111085). Presented March 10, 1920. Mr. Rinfret ..... *Not printed.*

152a. Supplementary Return to an Order of the House of the 3rd May, 1920, for a copy of all correspondence and reports concerning the dismissal of Mr. Elisée Parent, inspector of Inland Revenue, the 6th of September, 1916 (file No. 111085). Presented May 17, 1920. Mr. Rinfret ..... *Not printed.*

153. Return to an Order of the House of the 10th March, 1920, for a copy of all correspondence between the Dominion Government or any member thereof and the Dominion Manufacturers' Association or any manufacturer, relating to appeals from the Supreme or other courts in regard to validity of certain Dominion or Provincial Acts and Provincial Licenses whereby the Dominion Government undertook to give financial aid to said manufacturers for said appeals, as shown in the *Financial Times*, Montreal, of the 21st February, 1920. Presented May 10, 1920. Mr. Devlin ..... *Not printed.*

154. Return to an Order of the House of the 19th April, 1920, for a Return showing:—1. Number of translators employed by the Senate, House of Commons and the different departments of the Government, and number employed by each department. 2. Number employed permanently. 3. Number engaged for the session only. 4. Total annual cost of the translation service. 5. Whether any translation was done outside of Ottawa du the year ending 31st March, 1919. 6. If so, in how many instances, and what rate was paid per page of printed matter. Presented May 10, 1920. Mr. Hocken. ..... *Not printed.*

155. Return to an Order of the House of the 5th May, 1920, for a copy of a letter from the Board of Trade of the City of Quebec to the Minister of Trade and Commerce, dated October 24, 1919, concerning the new policy adopted by the Ocean Mail Steamers of not stopping at Quebec in their outward voyage, and a copy of the answer to said letter. Presented May 10, 1920. Mr. Lapointe.... *Not printed.*

156. Return to an Order of the House of the 29th April, 1920, for a Return showing:—1. Name of each official and clerk in the Fisheries Branch at Ottawa who will be in receipt of a salary of $1,800 or over during the fiscal year 1920-21 2. Salary of each such official and clerk during the fiscal years 1916-17, 1917-18, 1918-19 and 1919-20. 3. Minimum and maximum salary of each such official and clerk as at present fixed by the classifying experts of the Civil Service Commission. 4. What the salary of each such official and clerk will be during the fiscal year 1920-21. 5. What practical experience or direct connection, if any, each such official and clerk has had in or with the fishing industry; the nature of such experience or connection and the number of years it covers. 6. What position each such official and clerk, who has had no practical experience in or direct connection with the fishing industry, filled or what duties he performed on first becoming attached to the Fisheries Branch. 7. Present duties and responsibilities of each such official or clerk. Presented May 10, 1920. Mr. Duff ..... *Not printed.*

157. Return to an Order of the House of the 3rd May, 1920, for a copy of all correspondence, telegrams, and other documents exchanged between Dr. L. W. McNutt, Vancouver, B.C., and the Department of Soldiers' Civil Re-establishment, Sir Robert Borden and the Director of Medical Services of the Soldiers' Civil Re-establishment, with reference to claim for $2,590.72 by the said Dr. McNutt against the above mentioned department, and also with reference to the resignation or dismissal of the said Dr. McNutt from the department in question. Presented May 11, 1920. Mr. Power.. ..... *Not printed.*

158. Return to an Order of the House of the 17th March, 1920, for a Return showing:—1. Number of employees in the inside service of the Labour Department. 2. How many are males. 3. How many are females. 4. How many males are French. 5. How many females are French. 6. How males are Protestants. 7. How many females are Protestants. Presented May 11, 1920. Mr. Hocken .. .. *Not printed.*

158a. Return to an Order of the House of the 17th March, 1920, for a Return showing:—1. Number of employees in the inside service of the Post Office Department. 2. How many are males. 3. How many are females. 4. How many males are French. 5. How many females are French. 6. How many males are Protestants. 7. How many females are Protestants. Presented May 11, 1920. Mr. Hocken. .. .. *Not printed.*

158b. Return to an Order of the House of the 17th March, 1920, for a Return showing:—1. Number of employees in the inside service of the Secretary of State Department, including the Printing Bureau. 2. How many are males. 3. How many are females. 4. How many males are French. 5. How many females are French. 6. How many males are Protestants. 7. How many females are Protestants. Presented May 11, 1920. Mr. Hocken. *Not printed.*

158c. Return to an Order of the House of the 12th April, 1920, for a Return showing:—1. Number of persons employed by the Civil Service Commission. 2. How many are males. 3. How many are females. 4. How many males are French. 5. How many females are French. 6. How many males are Protestants. 7. How many females are Protestants. Presented May 11, 1920. Mr. Hocken ..... *Not printed.*

158d. Return to an Order of the House of the 17th March, 1920, for a Return showing:—1. Number of employees in the inside service of the Department of Interior. 2. How many are males. 3. How many are females. 4. How many males are French. 5. How many females are French. 6. How many males are Protestants. 7. How many females are Protestants. Presented May 11, 1920. Mr. Hocken ..... *Not printed.*

158e. Return to an Order of the House of the 17th March, 1920, for a Return showing:—1. Number of employees in the inside service of the Marine and Fisheries Department 2. How many are males. 3. How many are females. 4. How many males are French. 5. How many females are French. 6. How many males are Protestants. 7. How many females are Protestants. Presented May 11, 1920. Mr. Hocken ..... *Not printed.*

CONTENTS OF VOLUME 10—*Continued.*

158*f*. Return to an Order of the House of the 22nd March, 1920, for a Return showing:—1. Number of employees in the inside service of the Finance Department including the Insurance Branch. 2. How many are males. 3. How many are females. 4. How many males are French. 5. How many females are French. 6. How many males are Protestants. 7. How many females are Protestants. Presented May 11, 1920. Mr. Tobin . . . . *Not printed.*

158*g*. Return to an Order of the House of the 17th March, 1920, for a Return showing:—1. Number of employees in the inside service of the Department of Trade and Commerce. 2. How many are males. 3. How many are females. 4. How many males are French. 5. How many females are French. 6. How many males are Protestants. 7. How many females are Protestants. Presented May 11, 1920. Mr. Hocken . . . . . *Not printed.*

158*h*. Return to an Order of the House of the 17th March, 1920, for a Return showing:—1. Number of employees in the inside service of the Militia Department. 2. How many are males. 3. How many are females. 4. How many males are French. 5. How many females are French. 6. How many males are Protestants. 7. How many females are Protestants. Presented May 17, 1920. Mr. Hocken . . . . . *Not printed.*

159. Return to an Order of the House of the 26th April, 1920, for a Return showing:—1. What institutions are at present under the jurisdiction and management of the Department of Soldiers' Civil Re-establishment. 2. Number of patients in each institution. 3. Number of employees in each institution. 4. Cost per year of each institution. Presented May 12, 1920. Mr. Pardee. . . . . *Not printed.*

160. Fifth Annual Report of the Board of Directors of the Canadian Northern Railway System, for the year ended December 31, 1919. Presented by Hon. Mr. Reid, May 12, 1920. . . . . *Printed for sessional papers only.*

161. First Annual Report of the Board of Directors of Canadian Government Merchant Marine, Limited. Presented by Hon. Mr. Reid, May 12, 1920 . . . . . *Printed for sessional papers only.*

162. Return to an Order of the House of the 12th May, 1920, for a Return showing:—1. Sales of military and other supplies made by the War Purchasing Commission in each of the years 1917, 1918 and 1919, and amount of money obtained for these supplies in each of the above years. 2. Whether these supplies were sold by tender, by advertisement, or by public auction. 3. How military supplies, including rugs, furniture, etc., at Camp Borden were sold, who the purchasers were and what prices were received for the various articles. Presented May 14, 1920. Mr. Ross . . . . *Not printed.*

163. Return to an Order of the House of the 19th April, 1920, for a copy of all papers, letters, correspondence between the Department of Justice or any of its officers and the Civil Service Commission or any of its members with reference to the promotion of the Secretary to the Deputy Minister of Justice in 1919 and 1920. Presented May 14, 1920. Mr. Cahill . . . . . *Not printed.*

164. Return to an Order of the House of the 24th March, 1920, for a copy of all correspondence and telegrams between the Dominion Government and the Alberta Government relating to irrigation development in Alberta, and more particularly to Lethbridge Northern Irrigation District. Presented May 17, 1920. Mr. Buchanan. . *Not printed.*

165. Return to an Order of the House of the 5th May, 1920, for a Return showing the names of all persons who have passed the Civil Service examinations from the province of Prince Edward Island in 1917, 1918 and 1919, showing: (*a*) the grade for which they passed; (*b*) the number of marks made by each; (*c*) those who are returned soldiers; (*d*) those who have received an appointment, with the name of their position. Presented May 17, 1920. Mr. Sinclair (P.E.I.). . . . . *Not printed.*

166. Return to an Order of the House of the 12th April, 1920, for a Return showing:—1. Number of Civil Service Investigating Commissions appointed since the 1st of January, A.D. 1895. 2. On what respective dates said Commissions were appointed, what number of Commissioners comprised each Board, their names and their home addresses. 3. How long each Board was engaged on such inquiry and how much was paid to each. 4. Whether there is any Board or any Member of a past or present Board now engaged in connection with the Civil Service inquiry or classification of the Civil Service, other than the regular Civil Service Commission of which Honourable Doctor Roche is the Chairman. 5. What amount or amounts were paid by the Government to the Civil Service Classification Commissioners during the time from 1st January, 1916, to and including the 15th of March, A.D. 1920, what amounts were paid to each of the said Classification Commissioners and on what dates. Presented May 17, 1920. Mr. McKenzie. . . . . *Not printed.*

167. Return to an Order of the House of the 17th May, 1920, for a Return showing:—1. Number of married women whose husbands did not serve in the Canadian Expeditionary Force who are in the pay of various Government departments at Ottawa. 2. Whether it is a fact that the Department of Immigration has in its employ a lady at a salary of $300 per month. 3. Whether this lady is the wife or mother of a returned soldier, and whether any effort was made at the time of her employment to secure the services of a war widow or dependent. 4. Whether this lady's husband is in the employ of the Government or of one of the provincial governments. 5. Whether it is a fact that the daughters of several departmental heads are employed by their fathers in Government service and that in such cases these young ladies hold positions which could be well filled with men who have been trained by the Department of Soldiers' Civil Re-establishment for the Civil Service but are unable to secure appointments. Presented May 19, 1920. Mr. Andrews . . . . . *Not printed.*

168. Copy of Order in Council, P.C. 1595, dated 31st July, 1919: Appointment of Victory Loan Special Committee in connection with the stabilizing of the Victory Loan of 1917. Presented by Sir George Foster, May 20, 1920. *Not printed.*

169. Reports submitted by the Officer in charge of the Canadian War Records Office, London, England, to the Right Honourable Sir Robert L. Borden, G.C.M.G., M.P., Prime Minister of Canada; and to the Honourable Sir Edward Kemp, K.C.M.G., M.P., Minister, Overseas Military Forces of Canada, 1916-1919, with which is included a Report of the Executive Committee of the Canadian War Memorials Fund. Presented by Sir Robert Borden, May 20, 1920. . . . . *Not printed.*

170. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of Indian Affairs in Ottawa. 2. Their names and salaries. Presented May 21, 1920. Mr. Hocken . . . . . *Not printed.*

170*a*. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of Labour in Ottawa. 2. Their names and salaries. Presented May 24, 1920. Mr. Hocken. *Not printed.*

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CONTENTS OF VOLUME 10—*Continued.*

170*b*. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of Marine in Ottawa. 2. Their names and salaries. Presented May 21, 1920. Mr. Hocken. *Not printed.*

170*c*. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of Public Archives in Ottawa. 2. Their names and salaries. Presented May 26, 1920. Mr. Hocken . . . . . *Not printed.*

170*d*. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of Trade and Commerce in Ottawa. 2. Their names and salaries. Presented May 26, 1920. Mr. Hocken . . . . . *Not printed.*

170*e*. Return to an Order of the House of 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of the Secretary of State in Ottawa. 2. Their names and salaries. Presented May 31, 1920. Mr Hocken . . . . . *Not printed.*

170*f*. Return to an Order of the House of 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of Mines in Ottawa. 2. Their names and salaries. Presented May 31, 1920. Mr. Hocken. *Not printed.*

170*g*. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of Naval Service in Ottawa. 2. Their names and salaries. Presented May 31, 1920. Mr. Hocken . . . . . *Not printed.*

170*h*. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Number of employees in the Department of Justice in Ottawa. 2. Their names and salaries. Presented May 31, 1920. Mr. Hocken. *Not printed.*

170*i*. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of the Interior in Ottawa. 2. Their names and salaries. Presented June 2, 1920. Mr. Hocken. *Not printed.*

170*j*. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of Railways and Canals in Ottawa. 2. Their names and salaries. Presented June 8, 1920. Mr. Hocken. . . . . *Not printed.*

170*k*. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of Public Works in Ottawa. 2. Their names and salaries. Presented June 10, 1920. Mr. Hocken. . . . . *Not printed.*

170*l* Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of Soldiers' Civil Re-establishment in Ottawa. 2. Their names and salaries. Presented June 14, 1920. Mr. Hocken . . . . . *Not printed.*

170*m*. Return to an Order of the House of 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of Public Printing. 2. Their names and salaries. Presented June 17, 1920. Mr. Hocken . *Not printed.*

170*n*. Return to an Order of the House of 19th May, 1920, for a Return showing:—1. Number of persons employed in the Department of Public Health. 2. Their names and salaries. Presented June 17, 1920. Mr. Hocken. . . *Not printed.*

170*o*. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Number of employees in the Post Office Department in Ottawa. 2. Their names and salaries. Presented June 18, 1920. Mr. Hocken. . . *Not printed.*

171. Also,—Return to an Order of the House of the 5th May, 1920, for a copy of a letter signed by twenty-two Senators and Members of the House of Commons representing the Provinces of Alberta, Saskatchewan and Manitoba, addressed to Sir Robert L. Borden, Prime Minister of Canada, dated September, 1919, recommending the shipment of grain by rail via Quebec; also a copy of the answer to such letter as well as the letters sent by J. T. Ross, Esq., President of the Quebec Board of Trade, to the Minister of Railways and Canals during the months of January and February, 1920, concerning export of wheat via Quebec, and of the letters of the Minister of Railways and Canals in answer thereto. Presented May 21, 1920. Mr. Lapointe . . . . . *Not printed.*

172. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Who the publishers are of the *Montreal Gazette*. 2. Amounts paid to the Montreal Gazette Publishing Company for each of the last fiscal years by the Dominion Government for (*a*) advertising, and (*b*) job printing. Presented May 21, 1920. Mr. Edwards. *Not printed.*

173. Return to an Order of the House of the 7th April, 1920, for a copy of all correspondence, letters and petitions received from the citizens of the Saguenay district and all others in connection with a subsidy from the Department of Trade and Commerce in order to obtain the services of a steamboat ferry between Ste. Catherine and Tadoussac. Presented May 21, 1920. Mr. Savard . . . . . *Not printed.*

174. Return to an Order of the House of the 19th March, 1919, for a return showing the names and post office addresses of all postmasters appointed in the Province of Nova Scotia since June 1, 1917, along with a copy of all correspondence with the Post Office Department or with the Civil Service Commission relating to such appointments. Presented May 26, 1920. Mr. Sinclair (Antigonish). . . . . *Not printed.*

175. Return to an Order of the House of the 3rd May, 1920, for a copy of the mortgage deeds for the twenty-five and the thirty-five million dollars granted by the Government of Canada to the Canadian Northern Railway Company in 1918 and 1919. Presented May 26, 1920. Mr. Papineau . . . . . *Not printed.*

176. Return to an Order of the Senate dated the 4th instant, for a Return showing all correspondence that may have taken place with the British Admiralty, and with the Naval Mission to India and the Dominion, 1919-20, and also a list of shareholders, officers and directors of the Imperial Oil Company. The Senate. . . . . *Not printed.*

177. Return to an Order of the Senate dated the 5th instant, for a Return of copies of contracts between any Department or Departments of the Government and the owners of the steamship *Lady Evelyn*, in respect to the carriage of mails, passengers and freight between Pictou, Souris, and the Magdalen Islands; and copies of schedules of rates for such service, if such schedules are in the possession of the Government. The Senate. . . . . *Not printed*

CONTENTS OF VOLUME 10—*Continued.*

178. Return of an Order of the House of the 10th May, 1920, for a Return showing:—1. Whether inspectors in charge of terminal elevators, under the Board of Grain Commissioners, have full authority to inspect grain, as provided for in the Canada Grain Act. 2. If not, why not. 3. If so, whether the inspectors issue the requisite inspection certificates, with their signatures attached thereto, as evidence of such inspection. 4. Whether the Chief Inspector or his immediate assistant, in charge of terminal elevators, has authority to change such inspection, without consent of the inspector directly in charge of a terminal elevator. 5. If so, whether this practice is provided for in the Canada Grain Act. 6. Whether inspection certificates, either inwards or outwards, are signed in blank by an officer under the Board of Grain Commissioners, and then filled in afterwards by a clerk. 7. Whether Western Inspection Certificates are signed in blank by the Chief Inspector or one of his officers, and then filled in by an officer in the Eastern Inspection District. 8. Whether the inward and outward inspection at terminal elevators is identically the same. 9. Whether the Canada Grain Act provides for the inspection of grain into terminal elevators, from steamers and barges. 10. If so, whether the inward or outward inspection governs. 11. How much grain the Government elevator, Port Arthur, has handled from September 1, 1919, to May 1, 1920. 12. How much grain the above elevator handled during the following crop years 1913-14, 1914-15, 1915-16, 1916-17, 1917-18, 1918-19. 13. Cost per bushel in handling grain in the Government elevator, Port Arthur, for the above crop years, and for the period, September 1, 1919, to May 1, 1920. 14. Whether the above cost includes any provision for interest on investment and management. 15. Revenue per bushel for the above period: (*a*) including as revenue, money derived from the sale of overages, screenings and scalpings; (*b*) excluding as revenue, money derived from the sale of overages, screenings and scalpings. 16. Number of employees engaged in the above elevator during the above periods. 17. Name of the senior officer or manager who superintended the operations of the Government elevators under the Department of Trade and Commerce, for the above periods. 18. Whether all the Government elevators carry insurance on grain stored therein, in accordance with law. 19. If not, why the discrimination against the other commercially owned elevators, and on whose authority the law is broken. 20. Section 95, subsection 7, of the Canada Grain Act provides for the confiscation of overages over one-quarter of one per cent to the Government. Whether the Board of Grain Commissioners are keeping strict accounting of all grain going into and out of the terminal elevators, including screenings and scalpings, so as to arrive at the above figures. 21. Whether the Registration Department, under the Board of Grain Commissioners, has full information tabulated showing the gross weight in and gross weight out of terminal elevators. 22. Change made by the Board of Grain Commissioners in the wording of the outward weight certificates. 23. When the change was made. 24. Whether the weight certificate, as worded, was considered faulty up to the time of the change. 25. If not, why the change in the wording was made. 26. Whether the Canada Wheat Board has an officer at Fort William, whose duty it is to check the grades given by the inspection department under the Department of Trade and Commerce, on all grains shipped for and on account of the Canada Wheat Board. 27. If so, how many officers are engaged in this office, their names and salaries. 28. If so, what the necessity is of two Government officials doing the one task. 29. If so, whether the expenses incidental to this office, are deducted from the money which ought rightly be given to the farmers, for the participation certificates issued. 30. Whether the Canada Wheat Board accepts the inspection certificates as issued by the Department of Trade and Commerce, without reservation. 31. Whether the Canada Wheat Board always avails itself of the highest market for all wheat sold for and on account of the producers. 32. Since the Government has taken over the control of the wheat business, whether this has had a tendency to reduce the work of the Board of Grain Commissioners. 33. If so, whether the number of employees under the Board of Grain Commissioners have been reduced, for the purposes of economical administration. 34. Whether the administration of the Canada Grain Act is self sustaining. 35. If not, how the deficits are made up from year to year and on whose authority. 36. Salaries paid to the Secretary of the Board of Grain Commissioners and the Secretary of the Canada Wheat Board. 37. Whether the public terminal elevators at Fort William or Port Arthur purchase and sell grain from time to time, contrary to the Canada Grain Act. 38. If so, on whose authority. 39. Section 48 of the Canada Grain Act provided for the fixing of grades other than statutory grades, by the Grain Standards Board. Whether this Board has fixed the composition of grades of: (*a*) screenings, (*b*) scalpings. 40. If not, why not. 41. If not, who has fixed the composition and grades up to the present time, and on what authority. 42. If fixed, what they are. 43. Whether the original dockages taken from the grain are returned to the producer or the buyer of the warehouse receipt covering the specific parcel. 44. If not, why not. 45. How long the Government, through the Department of Agriculture, has handled standard stock food ex terminal elevators. 46. Whether the venture has been profitable. 47. Surplus or deficit for each year. 48. Price paid to the terminal elevators for the standard stock food basis f.o.b. Fort William. 49. Price received by the Government for the same food on the same basis. Presented May 27, 1920, Mr. Stevens. . . . . *Printed for sessional papers only.*

179. Memorandum No. 6, respecting work of the Department of Militia and Defence—European War—from November 1, 1918, to October 31, 1919. Presented by Hon. Mr. Guthrie, May 28, 1920. . . . . *Not printed.*

180. Return to an Order of the House of the 12th May, 1920, for a Return showing:—1. Whether the Government operations at the Dog Fish Reduction Works at Clark's Harbour, Nova Scotia, have been discontinued. 2. If so, what disposition has been made of the property. 3. Total Government disbursements including the original cost and loss in operation. 4. On whose report or recommendation the operation was abandoned. 5. Recommendation of the authority advising abandonment. 6. Whether J. B. Fielding, of the Honorary Advisory Council for Scientific and Industrial Research, authorized the report of the chairman on fish waste in Canada as intimated on page 53 of the report of the Administrative Chairman of the Honorary Advisory Council for Scientific and Industrial Research for the year ending March 31, 1919. 7. Whether Mr. Fielding reported with regard to the above-mentioned plant as follows: "At Clark's Harbour I inspected the Government Dog Fish Reduction plant, which though very badly cared for appeared to be in working order, and well worth, in my opinion, retaining for the purpose of the manufacture of fertilizer, though quite unsuitable for the manufacture of food." 8. Consideration given by the Government to Mr. Fielding's report. Presented May 28, 1920, Mr. McCurdy. *Not printed.*

181. Return to an Order of the House of the 12th May, 1920, for a return showing the total amounts paid for advertisements or newspaper articles relating to voluntary enlistment before the Military Service Act of 1917 was in force: (*a*) to English newspapers in Canada and United States; (*b*) to French newspapers in Canada and United States; (*c*) to English newspapers in the province of Quebec; (*d*) to French newspapers in the province of Quebec. Presented May 28, 1920, Mr. Archambault . . . . . *Not printed.*

182. Return to an Order of the House of the 15th March, 1920, for a Return showing. How many of the 22,954 temporary appointments made by the Board of Civil Service Commissioners since the armistice are at present on the pay rolls of the various departments of the Government. Presented May 28, 1920, Mr. Sinclair (Antigonish.) *Not printed.*

183. Return to an Order of the House of the 3rd May, 1920, for a Return showing:—1. How many generals belonging to the permanent force have had to give up their rank during the last six months. 2. How many generals have been promoted since the armistice, and the names of those who are still in the service. 3. How many officers have

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been promoted brigadier general since the armistice, their names, how they are employed, and whether it is the intention to retain them in that rank. 4. How many officers of the permanent force have been pensioned, their names and the amount of pension. Presented May 28, 1920. Mr. Bureau . . . . . *Not printed.*

184. Final report of the work of Canadian Munition Resources Commission, from November, 1915, to March, 1919, inclusive. Presented by Sir Robert Borden, May 31, 1920 . . . . . *Not printed*

184a. Copy of Order in Council, P.C. 1192, dated the 29th May, 1920; Dissolving the Canadian Munitions Resources Commission. Presented by Sir Robert Borden, May 31, 1920 . . . . . *Not printed*

185. Return to an Order of the House of the 26th April, 1920, for a copy of all correspondence between the Government or any member thereof and the Canadian Press, Limited, and the Canadian Associated Press, with regard to the establishment of an Imperial news service. Presented May 31, 1920. Mr. Robb . . . . . *Not printed.*

186. Return to an Order of the House of 3rd May, 1920, for a copy of all correspondence, telegrams, petitions or any other documents relative to the appointment of the Deputy Postmaster at Edmonton, Alberta. Presented May 31, 1920. Mr. Mackie (Edmonton.) . . . . . *Not printed.*

187. Return to an Order of the House of 31st March, 1920, for a copy of all correspondence, letters, telegrams, reports by detectives and others, and every document relating to the theft of Fifty Thousand dollars from the post office in the City of Edmonton, and to George Armstrong, Postmaster of the said post office, as well as to all employees in the said post office so far as all these may relate to the theft of Fifty Thousand dollars. Presented May 31, 1920. Mr. Mackie (Edmonton.) . . . . . *Not printed.*

188. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Names and respective salaries of the employees of the Parliamentary Library. 2. How many are graduates of any college in Arts or Library Science. 3. Whether it is the intention of the Government to make any more appointments to the said Library of persons who have not taken a library science course in some recognized college. Presented May 31, 1920. Mr. Wigmore . . . . . *Not printed.*

189. Return to an Order of the House of the 17th May, 1920, for a Return showing.—1. Whether the steamship *Metagama* sailed from Liverpool carrying soldiers and their families on or about the eighth day of February, A D. 1919. 2. Complaints made to the Militia Department or any other department of the Government as to the condition of said steamer at time of sailing and during said voyage. 3. Complaints made to the Government or any department thereof as to the treatment accorded to said soldiers, their wives or families during said voyage. 4. Whether a delegation from the City of St. John appeared before a committee of the Cabinet on or about the 27th day of February, 1919, protesting against alleged ill treatment of said soldiers and their families during the said voyage. 5. If so, who comprised said delegation and what members of the Government acted on said Cabinet committee. 6. Whether the Government took any action as a result of said conference. If so, what action, and the result of same. 7. Whether said delegation filed affidavits or solemn declarations of passengers as to the condition of the steamer and treatment accorded said passengers during said voyage. 8. If so, whether the Government held an investigation concerning said complaints. 9. Result of such investigation. Presented June 2, 1920. Mr. Copp . . . . . *Not printed.*

190. Return to an Order of the House of the 19th May, 1920, for a Return showing:—1. Total amount of sick mariners' dues collected from shipping entering Canadian ports for each of the years 1912, 1913, 1914, 1915, 1916, 1917, 1918 and 1919. 2. Amount expended by the Government in assistance to sick or distressed mariners during each of said years. 3. Number of officials of the Marine Department in Ottawa engaged exclusively on duties connected with collection, distribution and administration of sick mariners' dues. 4. Number of officials of Marine Department transferred to Health Department in connection with sick mariners' dues. Presented June 2, 1920. Mr. Stevens . . . . . *Not printed*

191. Return to an Order of the House of the 10th March, 1920, for an order showing:—1. Number of dismissals of Civil Servants made in the cities of the Dominion of Canada since the 1st of January, 1915. 2. Number of appointments which have taken place or have been made of Civil Servants in the cities of the Dominion of Canada since January, 1915. Presented June 2, 1920. Mr. Mackie (Edmonton.) . . . . . *Not printed*

192. Return to an Order of the House of the 10th March, 1920, for a return giving a list of the lawyers from the province of Quebec who acted: (*a*) as public representatives; (*b*) military representatives; (*c*) in the office of the registrars, and (*d*) in the office of the Central Appeal Judge, during the administration of the Military Service Act, showing the amount paid to each of the said lawyers. Presented June 4, 1920. Mr. Archambault . . . . . *Not printed.*

193. Copies of Orders in Council, P.C. 1022, dated 8th May, 1920, P.C. 1065, dated 15th May, 1920, and P.C. 1280, dated 4th June, 1920, covering the Cost of Living Bonus for employees in the Civil Service of Canada for the fiscal year, 1920-21. Presented by Hon. Mr. Rowell, June 7, 1920. . . . . *Not printed*

194. Copies of Orders in Council in respect to the Federal Housing Scheme, as follows:—P.C. 639, of March 27, 1920, authorizing an increase in the maximum amounts of the loans which may be granted under Class (*a*) of the Federal project. P.C. 375, of February 20, 1919, approving the General Scheme of Housing of the Province of Ontario. P.C. 2201, of October 30, 1919, approving certain amendments to the British Columbia Housing Scheme, approved on May 1, 1919, P.C. 907. P.C. 1090, of May 19, 1920, approving certain amendments to the General Housing Scheme of the Province of Quebec. P C 1233, of May 31, 1920, approving the General Scheme of Housing of the Province of Saskatchewan. Presented by Hon. Mr. Rowell, June 7, 1920. . . . . *Not printed.*

195. Return to an Order of the House of the 5th May, 1920, for the production of copies of all letters, telegrams, papers and correspondence exchanged between the Department of Agriculture and others in reference to the establishment of a Demonstration Farm at Baie St. Paul, in the County of Charlevoix. Presented June 7, 1920. Mr Casgrain. *Not printed.*

196. Return to an Order of the House of the 8th April, 1920, for a Return showing:—1. What is, or has been, the numerical strength of the staff of the Department of Public Works, by districts, throughout the Dominion of Canada since the 1st of January, 1915, to the 1st of January, 1920. 2. The names of the employees. 3. What salary is paid, or was, to each employee of the Department during this period. 4. Which of said employees could have been discharged since January, 1917. 5. How many employees in each district can now be dispensed with. 6. The expenditure in each of said districts during the entire period. Presented June 8, 1920. Mr Mackie (Edmonton). *Not printed*

CONTENTS OF VOLUME 10—*Continued.*

196a Supplementary Return to an Order of the House of the 8th April, 1920, for a Return showing:—1. What is, or has been, the numerical strength of the staff of the Department of Public Works, by districts, throughout the Dominion of Canada since the 1st of January, 1915, to the 1st of January, 1920. 2. The names of the employees. 3. What salary is paid, or was, to each employee of the Department during this period. 4. Which of said employees could have been discharged since January, 1917. 5. How many employees in each district can now be dispensed with. 6. The expenditure in each of said districts during the entire period. Presented June 17, 1920. Mr. Mackie (Edmonton). ... *Not printed.*

197. Return to an Order of the House of the 10th March, 1920, for a copy of all letters, telegrams, documents, petitions, reports, received by the Department of Railways and Canals and Canadian National Railways, and the correspondence exchanged between this Department and different persons and public bodies in reference to the curtailing of the railway service along the new line of the Quebec and Saguenay Railway between Quebec and Murray Bay since the 1st of November, 1919. Presented June 8, 1920. Mr. Casgrain ... *Not printed.*

198. Return to an Order of the House of the 7th April, 1920, for a copy of all correspondence, letters and telegrams in connection with the granting of an allowance by the Post Office Department for a regular postal ferry service by motor yacht between Ste. Catherine and Tadoussac. Presented June 8, 1920. Mr. Savard ... *Not printed.*

199. Return to an Order of the House of the 15th March, 1920, for a copy of all letters, petitions, telegrams and other documents relating to the retention in office, as a Fishery Overseer, of John A. Dillon, of Guysborough, N.S. Presented June 8, 1920. Mr. Sinclair (Antigonish) ... *Not printed.*

200. Return to an Order of the House of the 12th April, 1920, for a copy of all documents, letters, telegrams and all other papers and correspondence exchanged between the Government or any department or commission thereof and the Government of the United States, the State of New York, the State of Vermont, or any other body, and a copy of any evidence given before any commission, referring to seine or net fishing in Missisquoi bay. Presented June 8, 1920. Mr. Kay ... *Not printed.*

201. Return to an Order of the House of the 5th May, 1920, for a Return showing amount of money spent by the Dominion Government since Confederation on improvements in the harbours of Halifax, St. John, Quebec, Montreal, Toronto, Hamilton, Port Arthur, Victoria and Vancouver. Presented June 8, 1920. Mr. Foster (York). *Not printed.*

202. Orders of the Director of Coal Operations—Nos. 1 to 144, inclusive. Presented by Hon. Mr. Meighen, June 8, 1920. *Not printed.*

203. Return to an Order of the House of the 22nd March, 1920, for a Return showing:—1. Number of automobiles valued under $1,000 imported into Canada in each of the years 1918 and 1919. 2. Number valued at between $1,000 and $2,000. 3. Number at a greater valuation than $2,000. 4. Duty collected on these automobiles. 5. The duty collected on parts of automobiles imported during the years 1918 and 1919. 6. On what number of automobiles valued at less than $1,000 excise duty was paid in the years 1918 and 1919. 7. On what number of automobiles valued at between $1,000 and $2,000 excise duty was paid in the same years. 8. On what number of automobiles valued at over $2,000 excise duty was paid in the same years. 9. The amount of such excise duty. Presented June 9, 1920. Mr. Ross ... *Not printed.*

204. Return to an Order of the House of the 5th May, 1920, for a copy of all papers, documents and letters in connection with Dr. Michel Fiset, of Quebec City, appointment by Order in Council, dated 18th April, 1914, as parcel post supervisor in Quebec City, with a salary of $2,800 a year. Presented June 10, 1920. Mr. Lavigueur ... *Not printed.*

205. First Annual Report of the Board of Commerce of Canada, dated 31st May, 1920; and also,—Copy of Order in Council, P.C. 1261, dated 1st June, 1920, submitting the above Report for His Excellency's information. Presented by Sir Robert Borden, June 10, 1920. ... *Not printed.*

206. Copy of Order in Council, P.C. 2529, dated December 18, 1919, regarding the distribution to the Provinces of the sum of $200,000, which was placed at the disposal of the Department of Health for combatting venereal diseases. Presented by Hon. Mr. Rowell, June 11, 1920 ... *Not printed.*

207. Copy of Agreement between the Chief and Principal men of the Chippewas of Sarnia Band of Indians and His Majesty the King regarding the surrender of the Sarnia Indian Reserve to the Government of Canada, dated at Sarnia, Ont., 10th December, 1919. Presented by Hon. Mr. Meighen, June 14, 1920 ... *Not printed.*

208. Return showing:—1. How many sittings were held by the Railway Commission to fix compensation for damages caused by the passing of the Canadian Northern through North Bay. 2. Who presided over the said sittings. 3. The awards made. 4. To whom they were paid. 5. The total cost of the said sittings. 6. The amount paid for counsel fees. 7. What amount was paid for witnesses. 8. To whom the amounts were paid. Presented June 16, 1920. Mr. McDonald ... *Not printed.*

208a. Supplementary Return to an Order of the House of the 16th June, 1920, for a Return showing:—1. How many sittings were held by the Railway Commission to fix compensation for damages caused by the passing of the Canadian Northern through North Bay. 2. Who presided over the said sittings. 3. The awards made. 4. To whom they were paid. 5. The total cost of the said sittings. 6. The amount paid for counsel fees. 7. What amount was paid for witnesses. 8. To whom the amounts were paid. Presented June 21, 1920. Mr. McDonald. *Not printed.*

209. Return to an Order of the House of 2nd June, 1920, for a copy of all papers, documents, telegrams and reports concerning the indemnity paid to the widow and children of J. L. A. Forbes, killed at Aston Junction, the 11th of September, 1918, while on duty as brakeman on the Government railways. Presented June 17, 1920. Mr. Bourassa. *Not printed.*

210. Partial Return to an Order of the House of 5th May, 1920, for the production of copies of all Rules of Court made by the different Superior Courts of Criminal Jurisdiction of Canada according to the provisions of Section 576 of the Criminal Code. Presented June 17, 1920. Mr. Casgrain ... *Not printed.*

211. Return to an Order of the House of 19th March, 1920, for a copy of all correspondence between the Prime Minister of Canada and the Prime Minister of Great Britain under authority of a resolution of the Imperial War Cabinet of July 30, 1918. Presented June 17, 1920. Mr. Fielding ... *Not printed.*

CONTENTS OF VOLUME 10—*Continued.*

212. Copy of Order in Council, P.C. 1361, dated 16th June, 1920, accepting the resignation of Mr. W. F. O'Connor, as a Commissioner of the Board of Commerce of Canada; and also,—copy of letter communicating the said resignation. Presented by Sir Robert Borden June 17, 1920 . . . . . *Not printed.*

213. Return to an Order of the House of the 26th May, 1920, for a copy of all correspondence, petitions, reports and other documents regarding the establishment of rural mail routes in the parishes of Champlain, Batiscan and St. Luc, in the County of Champlain, Quebec. Presented June 18, 1920. Mr. Desaulniers . . . *Not printed.*

214. Return to an Order of the House of the 19th April, 1920, for a Return showing:—1. Number of non-Canadian born in the different Departments of the Government where the services of Engineers, Architects, Draughtsmen etc., are required. 2. Number of non-Canadian born Engineers, Architects, Draughtsmen, etc., who have been given positions within the last five years in the different departments of the Government. 3. Number of Canadian born Engineers, Architects, Draughtsmen, etc., who have obtained similar positions within the last five years. 4. Whether American Engineers were given preference in obtaining such positions and appointed over the heads of Canadian born Engineers, Architects, etc. Presented June 21, 1920. Mr. Casgrain . . . . . *Not printed.*

215. Return to an Order of the House of the 10th May, 1920, for a Return showing:—1. Total amount of drawback for the fiscal year ending March 31, 1920, paid to textile manufacturers on (*a*) raw cotton, and (*b*) cotton yarns. 2. Total amount of drawback for the fiscal year ending March, 1920, paid to textile manufacturers on (*a*) raw wool, and (*b*) woollen yarns. Presented June 21, 1920. Mr. Reid (Mackenzie) . . . . . *Not printed.*

216. Copy of Order in Council number 1238, passed on the 31st day of May, 1920, concerning a contract entered into with Griffenhagen and associates at a rate of $10,000 per month. Presented June 21, 1920. Mr. Lemieux . *Not printed.*

217. Statement showing number of Employees in the several Departments of the Public Service for the fiscal year ending March 31, 1921, designated in accordance with the new Classification Schedules. (Subject to possible amendment in some instances as the result of appeals pending but not yet finally disposed of.) Presented by Hon. Mr. Powell, June 23, 1920 . . . . . *Not printed.*

218. Return to an Order of the House of the 31st May, 1920, for a copy of all letters, telegrams and other documents relating to the closing of the life saving station at Richibucto Beach, in the county of Kent, N.B. Presented June 24, 1920. Mr. Leger . . . . . *Not printed.*

219. Return to an Order of the House of the 15th April, 1920, for a Return showing:—1. When the work under the present scheme of development of Toronto Harbour was commenced. 2. Miles of docks included in this scheme and how much of this work has been completed. 3. Depth of water provided by this scheme. 4. Expenditure by the Dominion Government on this scheme for each year since the commencement of the work. 5. Number of ships and tonnage entered and cleared from this harbour each year since 1912. 6. Amount of water borne freight imported and exported to and from this harbour since 1912. 7. What reduction, if any, in freight rates on goods entering and leaving Toronto by rail has been secured by reason of the harbour improvements in question. 8. What the extent of land reclamation is in connection with this scheme. 9. Who the owner of this land is and what the policy of the Government is relative thereto. 10. Depth of the St. Lawrence canals and of the Welland canal. Presented June 24, 1920. Mr. Campbell . . . . . *Not printed.*

220. Return to an Order of the House of 12th May, 1920, for a copy of all letters, telegrams, correspondence, documents and other papers exchanged between the Dominion Government, or any official thereof, or the officials of the Canadian Government Railways and the Government of New Brunswick, or any official of the said Government, or any of the officials of the St. John and Quebec Railway Company with regard to the procuring of running rights for the trains of the St. John and Quebec Railway over the Canadian Pacific Railway between Westfield Beach and St. John. Also of all papers, documents and correspondence exchanged between the Dominion Government or any officini thereof or any officials of the Canadian Government Railways and the Canadian Pacific Railway Company or any official thereof, regarding the securing of the said running rights. Presented June 20, 1920. Mr. Caldwell. . . . . *Not printed.*

221. Return to an Order of the House of the 20th May, 1920, for a copy of all telegrams, letters and other documents relating to the closing of the Life Saving Station at Cheticamp, Inverness County, N.S. Presented June 26, 1920. Mr. Chisholm . . . . . *Not printed.*

222. Report of the Administrative Chairman of the Honourary Advisory Council for Scientific and Industrial Research of Canada, for the year ending March 31, 1920. Presented by Sir George Foster, June 26, 1920. . . . *Not printed.*

223. Ordinances of the Yukon Territory, passed by the Yukon Council in the year 1920. The Senate . . *Not printed.*

224. Return to an Order of the House of the 23rd June, 1920, for a copy of letters, telegrams, petitions and documents of all kinds which passed between the Department of Public Works and any person during the years 1918, 1919, 1920, in any way referring to improvements made on Grand Etang Harbour, N.S. Presented June 30, 1920. Mr Chisholm . . . . . *Not printed.*

225. Return to an Order of the House of the 28th April, 1920, for a Return showing:—1. Number of private, assistant private, joint and associate secretaries appointed to members of the Cabinet, Chairman or Members of Commission since 1911, and how much money has been paid to each of them respectively. 2. Number of private, assistant private, joint and associate secretaries each of the Members of the Cabinet actually have. 3. Their names and respective salaries. 4. Number of employees in the office of each member of the Cabinet, their names and respective salaries. Presented June 30, 1920. Mr. Dechene . . . . . *Not printed.*

226. Return to an Order of the House of the 7th June, 1920, for a Return showing amounts paid to the following newspapers during the fiscal years 1919 and 1920 respectively for (*a*) advertising, (*b*) printing: *Montreal Gazette* and The Gazette Printing Company, *Montreal Daily Star*, *The Globe*, *The Mail and Empire*, Toronto, *The Telegram*, Toronto, *The Star*, Toronto, *The Journal* and *The Journal Press*, Ottawa, *The Citizen*, Ottawa. Presented June 30, 1920. Mr. Cowan . . . . . *Not printed.*

227. Return to an Order of the House of the 8th October, 1919, for a copy of all letters, telegrams, petitions, memorials or other papers or documents received by the Right Honourable the Prime Minister or any member of the Government during the year 1919 relating to the appointment of a Lieutenant-Governor for Prince Edward Island and the replies thereto. Presented June 30, 1920. Mr. Sinclair (Antigonish).

CONTENTS OF VOLUME 10—*Concluded.*

228. Return to an Order of the House of the 26th May, 1920, for a Return showing:—1. Who are or who were the men engaged by the Civil Service Commission to re-classify the Civil Service at Ottawa. 2. When they were employed and at what rate of wages. 3. Whether they are still in the service of the Civil Service Commission or are any of them in said service. 4. How much was paid to each of such assistants from date of engagement up to the end of April, 1920. 5 Total amount paid to the men so engaged from the date of the engagement to the end of April 1920. Presented June 30, 1920. Mr. McKenzie. ..... *Not printed.*

229. Return to an Order of the House of the 29th September, 1919, for a Return showing the cost of the Military Hospital at Saint Anne de Bellevue; the number of patients received and treated therein, to date; expenses to date for maintenance as to, (*a*) coal; (*b*) wood; (*c*) electricity; (*d*) food; (*e*) lingerie; (*f*) remedies; (*g*) social events and recreations; the cost of theatre installed in hospital; names of physicians, officers, nurses and privates of the general services, showing those who went to the front, and those who did not; their nationality and religion; salaries paid to each of the said persons; and the names and salaries of the chaplains attached to the hospital. Presented June 30, 1920. Mr. Archambault ..... *Not printed.*

230. Return to an Order of the House of the 14th June, 1920, for a Return showing the names of the societies which have filed copies of policies complying with the provisions of the Insurance Act, 1910, Geo. V, Chap. 157, Section 115; the names of the societies which have neglected to file copies of policies as required by said Act, and to whom licenses have been issued for the current year; and names of any societies from whom licenses have been withheld. Presented June 30, 1920. Mr. Archambault. ..... *Not printed.*

231. Halifax Graving Dock, *re* expropriation of. The Senate ..... *Not printed.*

ANNUAL REPORT

OF THE

DEPARTMENT OF THE INTERIOR

FOR THE

Fiscal Year ended March 31, 1919

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

[No. 25—1920.]

To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc., Governor General and Commander in Chief of the Dominion of Canada.

MAY IT PLEASE YOUR EXCELLENCY:

The undersigned has the honour to lay before Your Excellency the report of the transactions of the Department of the Interior for the fiscal year ending March 31, 1919.

Respectfully submitted,

A. MEIGHEN,
Minister of the Interior.

OTTAWA, August 5, 1919.

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REPORT

OF THE

DEPARTMENT OF THE INTERIOR

1918-19.

Hon. Arthur Meighen,
Minister of the Interior,
Ottawa.

I have the honour to submit the 46th Annual Report of the Department of the Interior for the twelve months ending the 31st of March, 1919, which shows that very considerable progress has been made with the task of settling returned soldiers upon Dominion lands in the Prairie Provinces.

The lands most suitable for farming and nearest to markets have been reserved for soldiers, but notwithstanding, we have also had a very considerable number of entries made outside of these reserved tracts by other bona fide settlers.

A large number of those who entered a few years ago are now applying for title and making final payments in connection with pre-emptions and purchased homesteads so that the revenue collected by the department has been very satisfactory.

A glance at our latest homestead map will show that the amount of Dominion land within reasonable distance of railway facilities is rapidly diminishing although our officers report that the newly surveyed townships in northern Alberta are remarkably fine agricultural land and will provide homes for all intending settlers for some years to come.

A Reclamation Service has been constituted and reconnaissance surveys are being conducted with a view to reclaiming and making productive large areas of vacant Dominion lands which are at present unsuitable for agriculture. Both irrigation and drainage works of an extensive nature are contemplated.

Very considerable progress has been made with the inventory of our natural resources, particularly water-power. It is expected that large development in the direction of the utilization of water-power and other natural resources for public purposes may be looked for in the industrial revival which must surely follow the period of the war.

I append hereto a brief synopsis of the work of the various branches, followed by more detailed statements submitted by the head of each branch.

STATEMENT of Gross Cash Receipts received from all sources during the fiscal year ended March 31, 1919, compared with the receipts for the previous fiscal year.

Source of Revenue.	Fiscal Years.		Increase.	Decrease.	Net Decrease.
	1918-1919.	1917-1918.			
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Dominion lands	3,615,958 52	4,557,438 61		941,480 09	
School lands	5,087,875 81	2,836,216 40	2,251,659 41		
Ordnance lands	4,819 27	7,929 75		3,110 48	
Seed grain	1,378,275 76	2,613,708 67		1,235,432 91	
Casual revenue	12,381 71	9,074 15	3,307 56		
Registration fees—Yukon	789 22	562 25	226 97		
Fines and forfeitures		170 00		170 00	
Fines and forfeitures-N.W.T.	35 00	383 00		348 00	
Fines under Immigration Act		3,133 00		3,133 00	
Chinese immigration revenue		336,757 00		336,757 00	
Sales of land—special account	239,075 10	626,203 49		387,128 39	
Deduct revenue from Chinese immigration and fines under Immigration Act now collected by Dept. of Immigration and Colonization	10,339,210 39	10,991,576 32	2,255,193 94	2,907,559 87	652,365 93
		339,890 00		339,890 00	339,890 00
Totals	10,339,210 39	10,651,686 32	2,255,193 94	2,567,669 87	312,475 93

SESSIONAL PAPER No. 25

STATEMENT of Cash Receipts on account of Dominion Lands Revenue for the fiscal year ended March 31, 1919, as compared with the receipts for the previous fiscal year.

Particulars.	1918-19.	1917-18.	Increase.	Decrease.	Net Decrease.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Homestead fees	42,190 00	83,180 00		40,990 00	
Pre-emption fees		7,870 00		7,870 00	
Purchased homestead fees		2,040 00		2,040 00	
Improvements	48,655 97	88,198 99		39,533 02	
Pre-emption sales under Act, 1908	1,899,359 52	2,596,932 35		697,572 83	
Purchased homestead sales	150,063 46	245,834 54		95,771 08	
General sales	131,881 45	191,729 12		59,847 67	
Sale fees	170 00		170 00		
Map sales, office fees, etc	11,039 54	12,066 22		1,026 68	
Rental of land	19,302 85	10,603 38	8,699 47		
Survey fees	48,287 00	7,915 99	40,371 01		
Timber dues	408,728 28	482,006 25		73,277 97	
Grazing rental	148,179 55	125,300 69	22,878 86		
Grazing lands, improvements	560 00	1,172 60		612 60	
Coal lands	375,895 14	334,889 57	41,005 57		
Hay permits	22,085 06	10,861 62	11,223 44		
Mining fees	52,342 25	59,679 31		7,337 06	
Hydraulic leases	4,393 72	2,273 23	2,120 49		
Dredging leases	1,745 10	2,943 45		1,198 35	
Export tax on gold	48,677 07	81,650 55		32,973 48	
Free certificates for export of gold	10 50	35 00		24 50	
Stone quarries	8,221 59	7,117 30	1,104 29		
Rent of water-power	1,452 32	1,210 00	242 32		
Sand, stone and gravel	1,104 44	1,984 98	9 46		
Petroleum	107,230 41	124,179 69		16,949 28	
Potash leases	3,906 10	60 00	3,846 10		
Irrigation fees	483 87	458 75	25 12		
Irrigation sales	11,556 38	11,595 54		39 16	
Fees re Board of Examiners, D.L.S.	100 00	250 00		150 00	
Patent and interchange fees	190 00	160 00	30 00		
Suspense account	6,837 93	3,598 95	3,238 98		
Interim receipt account, Yukon	15 00	153 00		138 00	
Forestry branch—sale of trees, etc	2,604 17	3,907 50		1,303 33	
Fishing permits	824 00	67 00	757 00		
Miscellaneous	2,849 15	4,242 52		1,393 39	
Rocky Mountain park	46,978 49	43,632 08	3,346 41		
Jasper park	4,285 91	5,292 83		1,006 92	
Waterton lakes park	1,992 95	1,307 65	685 30		
Yoho park	1,074 38	502 40	571 98		
Buffalo park	145 95	142 46	3 49		
Elk island park	10 25	1 00	9 25		
Glacier park	43 22	331 90		288 68	
Moose Mt. Buffalo reserve	102 40		102 40		
Antelope park	195 20	905 20		710 00	
Fort Anne park	116 37	45 00	71 37		
Point Pelee park	31 60		31 60		
Revelstoke park	20 00		20 00		
Bird sanctuaries, Lac la Biche	10 00		10 00		
	3,615,958 52	4,557,438 61	140,573 91	1,082,054 00	941,480 09
Refunds	76,031 02	113,680 44		37,649 42	
	3,539,927 50	4,443,758 17	140,573 91	1,044,404 58	903,830 67

In addition to $131,881.45 on account of general sales, the department received $239,075.10 from sales of railway lands, which sum, as provided for by Orders in Council, has been credited to special accounts in the books of the Finance Department.

STATEMENT showing Receipts on account of Dominion Lands from July 1, 1872, to March 31, 1919.

Fiscal Year.	Homestead Fees.	Pre-emption Fees.	Improvements.	Sales.		Map Sales, Office and Registration Fees, etc.	Dominion Lands Surveyors' Examination Fees.	Rents, Survey Fees, Miscellaneous, including Trust Account.	Purchased, Homestead, Inspection, Cancellation and Sundry Fees.	Timber Dues.
				Cash.	Scrip.					
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1872-73	6,960 00			19,170 20						109 25
1873-74	7,310 00			19,834 75				125 50		2,710 55
1874-75	11,510 00			13,666 90		129 00				2,335 25
1875-76	4,680 00			3,478 94	320 00					387 00
1876-77	2,250 00			1,085 86	136,955 16	4 00		100 00	40 00	320 00
1877-78	14,540 00			2,791 86	120,159 54		180 00		290 00	1,620 00
1878-79	17,690 00			4,998 35	210,904 84	81 00	310 00	13 70	410 00	325 00
1879-80	41,255 00	10,241 43		45,708 97	81,685 86	245 40	580 00	183 25	1,780 00	25,121 46
1880-81	20,150 00	10,801 75	269 00	71,170 17	70,828 30	985 40	420 00	37 58		32,028 34
1881-82	54 155 00	39,843 96	1,758 00	1,240,328 27	50,590 84	3,036 45	890 00	58 10		58,753 11
1882-83	73,015 00	54,725 00	7,114 91	516,092 21	33,638 40	3,109 50	830 00	501 77	0 45	90,066 46
1883-84	41,580 00	28,810 00	2,596 11	424,863 36	40,919 67	1,289 55	530 00	45,766 53	1,713 00	147,983 10
1884-85	25,645 00	17,100 00	2,328 75	199,275 32	45,875 60	1,621 82	370 00	50,068 57	2,685 05	87,474 99
1885-86	26,110 00	14,371 00	1,101 50	76,140 41	214,657 97	1,339 34	360 00	20,070 00	5,025 40	64,820 31
1886-87	19,614 00	6,887 93	1,971 55	48,175 76	337,640 19	1,171 39	240 00	44,561 00	7,778 53	65,111 74
1887-88	23,691 00	4,830 00	1,918 35	52,238 36	313,522 67	1,660 75	240 00	20,591 41	12,078 50	91,961 55
1888-89	39,460 00	10,550 00	4,128 48	57,513 16	318,238 47	1,410 16	220 00	10,389 57	20,402 50	90,290 00
1889-90	35,920 00	8,580 00	3,250 54	54,896 85	228,744 47	2,099 07	190 00	3,316 23	20,232 50	84,642 95
1890-91	29,164 10		6,302 61	91,664 98	171,425 14	1,854 78	88 00	7,951 65	14,712 50	102,902 71
1891-92	46,994 00		6,472 31	108,901 01	97,822 41	2,147 31	135 00	29,898 49	23,104 00	106,461 35
1892-93	37,689 74		7,113 50	93,671 67	77,231 18	975 20	82 00	18,509 35	22,014 00	105,865 24
1893-94	36,462 26		3,497 76	53,254 71	27,840 96	973 11	40 00	13,457 09	11,097 90	81,290 51
1894-95	29,661 88		3,567 90	37,293 71	23,239 62	695 99		6,271 77	6,566 50	74,079 20
1895-96	18,278 00		3,163 15	46,373 98	46,929 65	619 78	50 00	21,679 31	6,810 50	61,923 47
1896-97	21,179 00		3,737 01	49,335 53	16,929 38	795 05	70 00	19,421 98	8,527 00	68,992 82
1897-98	34,780 00		5,649 63	80,178 64	28,918 14	1,987 40	10 00	21,242 66	10,042 50	119,313 78
1898-99	58,235 00		4,297 62	116,598 35	21,397 58	1,262 05	20 00	75,085 95	13,549 00	155,360 63
1899-1900	72,690 00		4,835 81	103,247 58	88,756 22	1,258 85	190 00	38,072 54	14,937 00	126,345 82
1900-1901	79,910 00		5,213 22	40,360 93	326,270 03	3,874 14	165 00	70,970 54	12,722 00	209,399 32
1901-1902	144,425 00		8,481 46	66,950 21	169,767 13	5,792 96	370 00	71,997 30	663 00	207,790 90
1902-1903	329,409 65		11,829 08	155,507 59	158,452 66	5,911 96	365 00	125,158 56	595 00	470,916 93
1903-1904	255,772 36		15,119 47	196,750 15	188,424 22	5,549 13	463 50	81,550 46	1,081 00	397,344 33
1904-1905	304,806 25		21,571 25	154,128 04	19,644 59	4,879 13	906 50	144,924 31	1,205 00	266,951 46
1905-1906	417,834 25		31,795 19	442,588 69	7,651 57	6,042 31	474 00	141,948 55	976 25	292,684 53
1906-1907 (nine months)	215,449 55		39,763 63	494,117 12	11,349 89	5,449 06	420 00	69,536 31	1,089 51	379,476 32
1907-1908	301,693 73		71,139 47	656,303 03	92,311 24	7,727 29	690 00	148,914 00	1,283 50	473,608 91
1908-1909	389,039 00	141,550 15	70,928 86	951,442 28	20,136 27	7,296 55	1,040 00	75,596 96	9,946 50	269,837 52

1909-1910	415,232 00	174,250 00	105,009 07	1,239,037 33	9,973 84	9,135 49	1,577 10	100,257 89	14,028 30	378,010 70
1910-1911	445,135 00	156,485 00	143,225 13	1,193,756 04	1,437 84	8,730 01	1,310 00	12,111 92	20,142 85	387,054 96
1911-1912	391,703 12	102,070 00	184,825 92	1,967,182 85	3,256 99	11,239 14	1,400 00	44,167 03	14,745 50	400,668 61
1912-1913	337,055 00	85,940 00	168,904 42	1,650,491 87	6,157 27	14,483 91	1,040 00	17,866 65	11,380 00	463,738 75
1913-1914	317,412 00	61,660 00	187,052 46	1,279,223 51	240 00	16,056 07	1,350 00	40,148 65	8,402 00	378,365 33
1914-1915	238,295 00	28,720 00	114,982 17	691,122 56	80 00	14,290 23	970 00	33,234 14	4,776 10	310,934 29
1915-1916	170,350 00	22,760 00	112,782 70	1,073,970 21	.....	11,485 83	470 00	19,495 98	3,475 00	378,960 68
1916-1917	112,110 20	14,690 00	112,711 33	2,767,203 99	332 61	13,976 95	560 00	21,212 91	2,910 00	429,403 09
1917-1918	83,180 00	7,870 00	89,371 59	3,046,091 55	131 47	12,066 22	250 00	26,513 84	2,200 00	482,006 25
1918-1919	42,190 00	.....	49,225 97	2,192,860 81	323 41	11,039 54	100 00	77,291 91	360 00	408,728 28
Total	5,832,974 09	1,002,736 16	1,619,068 88	23,831,041 66	3,821,056 39	205,769 30	20,026 70	1,800,271 31	315,778 29	8,837,480 81

STATEMENT showing Receipts on account of Dominion Lands from July 1, 1872, to March 31, 1919.

Fiscal Year.	Grazing Lands.		Hay, Coal, Mining, Stone Quarries, Export Tax on Gold, etc.		Canadian National Park.	Colonization Lands.		Gross Revenue.	Refunds.	Net Revenue.
	Cash.	Scrip, etc.	Cash.	Scrip.		Cash.	Scrip.			
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1872-73								26,239 45		26,239 45
1873-74								29,980 80		29,980 80
1874-75								27,641 15		27,641 15
1875-76								8,865 94		8,865 94
1876-77								140,755 02		140,755 02
1877-78								139,584 40		139,584 40
1878-79								234,732 93		234,732 93
1879-80								206,801 37	4,636 08	202,165 29
1880-81								206,990 54	5,038 22	201,952 32
1881-82	2,245 00		40 00			354,036 17		1,805,734 87	10,687 55	1,795,047 32
1882-83	22,844 43		913 91			248,492 01		1,051,403 60	8,746 05	1,042,657 55
1883-84	11,370 60		640 90			253,713 40		1,001,776 67	9,220 50	992,556 17
1884-85	17,089 75		815 63			1,214 22		451,564 65	12,076 85	439,493 80
1885-86	29,562 51	3,131 08	1,284 83					457,973 95	13,389 12	394,584 83
1886-87	14,242 77	39,487 67	1,570 49	80 00				588,532 80	19,543 16	568,989 64
1887-88	5,922 47	23,023 28	2,273 73	80 00	2,951 58		10,000 00	569,986 68	6,277 66	563,709 02
1888-89	2,207 69	16,802 63	3,946 55		2,528 73		16,000 00	594,088 04	5,226 23	588,861 81
1889-90	1,305 57	9,021 63	9,242 08		1,084 37			462,536 26	8,209 74	454,326 52
1890-91	3,079 55	16,193 77	8,628 44	160 00	2,797 37	5 28	4,460 50	460,990 76	7,195 27	453,795 49
1891-92	3,726 86	17,222 60	5,616 85		3,648 45			452,151 08	15,291 39	436,859 69
1892-93	6,380 80	11,542 39	6,266 13		4,983 23			392,324 43	18,344 97	374,009 46
1893-94	5,740 79	7,687 86	6,243 15		2,523 92			250,069 12	4,544 01	245,525 11
1894-95	5,353 72	8,628 00	5,229 54		2,321 87			202,983 10	4,365 99	198,617 11
1895-96	7,071 86	6,255 90	5,813 51		2,734 82			227,694 93	8,368 79	219,326 14
1896-97	4,715 01	2,500 00	8,518 18		2,132 11			206,853 57	15,010 54	191,843 03
1897-98	4,728 58	510 39	699,334 76		3,045 65			1,009,741 63	4,678 55	1,005,063 08
1898-99	5,245 88		1,130,371 60		2,994 16			1,584,328 32	32,296 39	1,552,031 93
1899-1900	8,382 86	4,083 30	1,038,195 42	20 00	2,727 60			1,503,743 00	23,062 28	1,480,680 72
1900-1901	4,726 28	14,671 99	1,101,808 33	20 00	4,047 31			1,874,159 09	18,368 85	1,855,790 24
1901-1902	7,292 46	8,409 27	737,878 43		*2,861 13			1,432,679 25	27,165 55	1,405,513 70
1902-1903	13,913 33	15,041 33	687,722 05		*5,063 69			1,890,886 83	21,519 84	1,869,366 99
1903-1904	19,790 27	15,202 15	495,579 18		*9,198 48			1,681,824 70	36,721 48	1,645,102 95
1904-1905	36,145 32	5,237 36	364,923 59		*14,059 55			1,339,382 35	25,786 90	1,313,595 45
1905-1906	51,583 89	80 00	296,769 19		18,883 83			1,709,315 28	33,418 36	1,685,896 92
1906-1907 (nine months)	43,711 91	400 00	213,852 59		*15,887 42			1,490,503 31	35,117 75	1,455,385 83
1907-1908*	43,211 78	4,038 01	266,415 31		27,232 87			2,094,579 17	115,080 04	1,979,499 13
1908-1909	53,312 79	3,257 84	252,972 17		31,321 20			2,277,678 09	102,463 78	2,175,214 31
1909-1910	67,434 29	5,081 47	460,154 29		43,264 36			3,022,446 13	121,431 15	2,901,014 98
1910-1911	60,702 80	2,356 00	774,569 27		69,054 59			3,306,073 41	198,689 47	3,107,383 94

1911-1912	69,519 41	1,520 00	729,240 42	.....	56,497 74	.....	.....	3,978,036 73	197,631 35	3,780,405 38
1912-1913	79,412 76	.....	779,695 53	1,587 32	37,448 72	.....	.....	3,655,202 20	246,105 26	3,409,096 94
1913-1914	84,926 15	320 00	889,863 15	.....	48,800 33	.....	.....	3,338,819 65	277,309 33	3,061,510 32
1914-1915	101,710 58	400 00	1,600,455 09	.....	37,805 97	.....	.....	3,177,866 73	317,764 75	2,860,101 98
1915-1916	118,995 02	160 00	493,280 97	.....	37,493 58	.....	.....	2,443,639 92	143,942 57	2,299,697 35
1916-1917	128,341 50	.....	600,934 13	.....	45,851 45	.....	.....	4,190,238 16	134,243 14	4,055,995 02
1917-1918	125,300 69	240 00	630,427 95	.....	52,160 52	.....	.....	4,557,810 08	113,680 44	4,444,129 64
1918-1919	148,179 55	.....	630,975 74	.....	55,006 72	.....	.....	3,616,281 93	76,031 02	3,540,250 91
Total	1,419,387 42	242,515 92	14,862,462 99	1,947 32	648,113 25	857,461 08	30,460 50	65,318,492 07	2,528,644 37	62,819,847 70

* Including the scrip.

STATEMENT showing yearly the Gross Revenue (in cash only) received from all sources from July 1, 1899, to March 31, 1919.

Fiscal Year.	Dominion Lands.	School Lands.	Seed Grain.	Ordnance Lands.	Fines and Forfeitures.	Registration Fees.	Casual Revenue.	Chinese Immigration Revenue.	Total
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1899-1900	1,410,883 48	220,874 78	15,271 84	11,043 53	1,452 92	21,751 90	3,664 00		1,684,942 45
1900-1901	1,533,197 07	48,049 83	15,711 63	14,604 47	1,977 96	33,979 77	1,587 57		1,649,108 30
1901-1902	1,254,333 56	193,410 75	20,293 06	16,967 36	1,955 61	50,854 99	3,900 62		1,541,715 95
1902-1903	1,716,597 20	392,206 93	28,789 97	17,612 79	5,220 88	81,404 18	2,230 26		2,244,062 21
1903-1904	1,478,106 33	233,769 62	26,122 30	30,491 34	5,911 92	109,233 73	3,402 94		1,887,041 18
1904-1905	1,314,485 40	332,914 48	16,471 34	10,346 90	10,018 49	123,082 86	4,258 14		1,811,577 61
1905-1906	1,701,580 71	608,960 79	12,577 29	10,893 17	3,304 77	180,310 73	8,496 09		2,526,123 55
1906-1907 (9 months)	1,478,749 51	724,353 73	10,850 06	6,663 90	21 00	46,124 20	11,785 81		2,278,548 21
1907-1908	1,998,219 92	708,045 83	12,899 84	8,674 95	1,650 00	2,256 65	20,069 03		2,751,816 22
1908-1909	2,254,283 98	687,422 74	53,590 86	205,749 96	281 00	1,352 13	26,224 29		3,228,904 96
	16,140,437 16	4,150,009 48	212,578 19	333,051 37	31,794 55	650,351 14	85,618 75		21,603,840 64
1909-1910	3,007,390 82	1,292,259 95	175,152 72	189,902 48	211 00	1,471 49	42,625 96		4,709,014 42
1910-1911	3,302,279 57	1,614,733 93	153,351 14	6,009 34	4,052 22	1,378 19	11,336 06		5,093,140 45
1911-1912	3,973,259 74	1,594,533 96	119,634 13	11,566 46	10,510 48	1,066 05	32,824 65	971,339 00	6,714,734 47
1912-1913	3,647,457 61	1,621,508 11	171,342 87	60,607 80	7,150 35	1,241 25	22,873 55	3,549,242 00	9,081,423 54
1913-1914	3,313,259 65	1,215,822 37	176,736 89	5,805 98	7,888 50	966 50	27,884 47	2,644,593 00	7,392,957 36
1914-1915	3,177,386 73	943,717 00	68,263 56	4,416 64	5,828 00	969 85	11,738 10	588,124 00	4,800,443 88
1915-1916	2,443,479 92	934,965 37	2,525,528 50	5,997 98	3,075 21	908 15	28,002 62	19,389 00	5,961,346 75
1916-1917	4,189,905 55	1,699,370 06	3,652,729 95	5,553 26	2,184 72	796 85	15,618 26	140,487 00	9,706,644 75
1917-1918	4,557,438 61	2,836,216 40	2,613,708 67	7,929 75	3,686 00	562 25	9,074 15	336,757 00	10,365,372 83
1918-1919	3,615,958 52	5,087,875 81	1,378,275 76	4,819 27	35 00	789 22	12,381 71		10,100,135 29
	35,227,816 72	18,841,002 96	11,034,723 29	302,608 96	44,621 48	10,149 80	214,359 53	8,249,931 00	73,925,213 74
Increase	19,087,379 56	14,690,993 48	10,822,145 10		12,826 93		128,740 78	8,249,921 00	52,321,373 10
Decrease				30,432 41		640,201 34			

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STATEMENT of Revenue collected within the Canadian National Parks for the fiscal year ended March 31, 1919, as compared with the previous years.

Particulars.	Fiscal Years. 1918-19.	Fiscal Years. 1917-18.	Increase.	Decrease.	Net Increase.
Rocky Mountain Park.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Rent	9,994 16	7,561 94	2,432 22		
Timber dues	979 37	1,541 46		562 09	
Water rates (sulphur)	898 59	779 86	118 73		
Cold water rates	7,347 71	7,026 78	320 93		
Sewer rates	2,990 35	2,552 80	437 56		
Transfer fees	120 00	106 00	14 00		
Cave and basin bathing tickets	7,711 00	8,278 60		567 60	
Livery licenses	221 00	448 00		227 00	
Pool, billiard and bowling licenses	190 00	210 00		20 60	
Boat licenses	94 00	28 00	66 00		
Butcher licenses	80 00	60 00	20 00		
Grazing rental	350 00	397 00		47 00	
Hot springs bathing tickets	6,096 70	6,612 50		515 80	
Telephone rent	2,640 82	2,018 86	591 96		
Fines	303 75	177 00	126 75		
Peddlers' licenses	68 00	62 00	6 00		
Guides' licenses	15 00	50 00		35 00	
Camping permits	78 00	61 00	17 00		
Cemetery lots	143 00	58 00	85 00		
Tea room licenses	220 00	220 00			
Sand	15 75	27 42		11 67	
Impounding fees		2 00		2 00	
Dog licenses	256 00	262 00		6 00	
Automobile licenses	3,203 00	2,489 00	714 00		
Scales	3 00	40 50		37 50	
Ice	11 00	6 00	5 00		
Sale of lime	15 25	15 35		10	
Theatre licenses	22 00	45 00		23 00	
Building permits	17 00	25 00		8 00	
Garden and dairy licenses	15 00	100 00		55 00	
Gum machines	28 00	42 00		14 00	
Electricians' licenses		1 00		1 00	
Boxing licenses		10 00		10 00	
Stone quarries		119 45		119 45	
Golf coupons	2,064 00	2,069 00		5 00	
Sale of lots	107 90		107 90		
Coal leases	366 85		366 85		
Miscellaneous	282 28	98 56	183 72		
	46,978 49	43,632 08	5,613 62	2,267 21	3,346 41
Glacier Park.					
Rent	27 72	329 15		301 43	
Camping permits	3 00		3 00		
Grazing rental	10 00		10 00		
Timber dues	2 50	1 75	75		
Building permits		1 00		1 00	
	43 22	331 90	13 75	302 43	Decrease. 288 68
Revelstoke Park.					
Rent	20 00		20 00		20 00
Jasper Park.					
Rent	606 68	3,895 80		3,289 12	
Timber dues	84 09	80 78	3 31		
Building permits	3 00	13 00		10 00	
Boat licenses and ferry fees	5 00	5 00			
Hay dues	2 50		2 50		
Peddlers' licenses	16 00	12 00	4 00		
Fines	181 00	67 00	114 00		
Grazing rental	124 00	261 00		137 00	

STATEMENT of Revenue collected within the Canadian National Parks for the fiscal year ended March 31, 1919, as compared with the previous years—*Con.*

Particulars.	Fiscal Years.		Increase.	Decrease.	Net Increase.
	1918-19.	1917-18.			
Jasper Park.—Con.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Guides' licenses	12 50	27 50		15 00	
Drivers' and livery licenses	49 00	144 00		95 00	
Camping permits	14 00	85 50		71 50	
Pool, billiard and bowling licenses	90 00	210 00		120 00	
Dog licenses	160 00	176 00		16 00	
Restaurant licenses	40 00	30 00	10 00		
Theatre licenses	12 00	10 00	2 00		
Butcher licenses	10 00	20 00		10 00	
Telephone rent	20 00	25 00		5 00	
Cold water rates	30 00	223 00		193 00	
Coal leases	2,788 38		2,788 38		
Miscellaneous	37 76	7 25	30 51		
	4,285 91	5,292 83	2,954 70	3,961 62	Decrease. 1,006 92
Yoho Park.					
Timber dues	72 12	27 00	45 12		
Rent	954 66	426 95	527 71		
Transfer fees	6 00	4 00	2 00		
Camping permits	2 00		2 00		
Cemetery lots	3 00	9 00		6 00	
Grazing rental	36 60	33 25	3 35		
Miscellaneous		2 20		2 20	
	1,074 38	502 40	580 18	8 20	571 98
Waterton Lakes Park.					
Rent	215 00	257 48		42 48	
Camping permits	128 00	112 00	16 00		
Timber dues	31 75	16 25	15 50		
Fines	30 00	13 00	17 00		
Guides' licenses	2 50	2 50			
Grazing rental	1,462 20	777 92	684 28		
Hay dues	9 00	2 50	6 50		
Drivers' and livery licenses	8 00	22 00		14 00	
Boat licenses	49 50	22 00	27 50		
Transfer fees	2 00		2 00		
Building permits	35 00	42 00		7 00	
Tea room licenses	20 00	20 00			
Miscellaneous		20 00		20 00	
	1,992 95	1,307 65	768 78	83 48	685 30
Elk Island Park.					
Timber dues	25		25		
Camping permits	10 00	1 00	9 00		
	10 25	1 00	9 25		9 25
Buffalo Park.					
Timber dues	7 25	7 50		25	
Hay dues	126 70	80 10	46 60		
Grazing rental	12 00		12 00		
Miscellaneous		54 86		54 86	
	145 95	142 46	58 60	55 11	3 49
Moose Mt. Buffalo Park.					
Grazing rental	102 40		102 40		102 40

STATEMENT of Revenue collected within the Canadian National Parks for the fiscal year ended March 31, 1919, as compared with the previous years.—*Con.*

Particulars.	Fiscal Year.		Increase.	Decrease.	Net Increase.
	1918-19.	1917-19.			
Antelope Park	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Grazing rental	195 20	905 20		710 00	Decrease. 710 00
Fort Anne Park.					
Hay dues	30 00	45 00		15 00	
Miscellaneous	86 37		86 37		
	116 37	45 00	86 37	15 00	71 37
Point Pelee Park.					
Rent	31 60		31 60		31 60
Bird Sanctuaries—Lac la Biche.					
Rent	10 00		10 00		10 00
Totals	55,006 72	52,160 52	10,249 25	7,403 05	2,846 20

THE LAND SITUATION, Manitoba, Saskatchewan and Alberta, corrected to January 1, 1919.

Province.	Surveyed Area.			Unsurveyed Area.			Total Area.		
	Land.	Water.	Total.	Land.	Water.	Total.	Land.	Water.	Total.
Manitoba	31,208,717	4,246,300	35,455,017	112,361,981	13,355,300	125,717,281	143,570,698	17,601,600	161,172,298
Saskatchewan	76,934,303	1,902,300	78,836,603	75,406,017	6,845,380	82,251,397	152,340,320	8,747,680	161,088,000
Alberta	82,862,766	2,285,050	85,147,816	76,015,894	2,218,690	78,234,584	158,878,660	4,503,740	163,382,400
Totals	191,005,786	8,433,650	199,439,436	263,783,892	22,419,370	286,203,262	454,789,678	30,853,020	485,642,698

A large proportion of the unsurveyed area has not yet been explored, except in a very partial way, and the area suitable for agriculture cannot be estimated with any degree of accuracy.

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DETAILED STATEMENT of Surveyed Areas in Manitoba, Saskatchewan and Alberta, January 1, 1919.

—	Manitoba.	Saskatchewan.	Alberta.	Total.
	Acres.	Acres.	Acres.	Acres.
Area under homestead (including military homesteads)	8,417,400	27,133,700	18,145,500	53,696,600
Area under pre-emption and pur. p'ds (Sept. 1, 1908, to Mar. 20, 1918)		5,854,200	2,825,300	8,679,500
Area under Half-Breed scrip, sales, special grants, etc.	5,087,400	2,302,000	1,223,300	8,612,700
Area granted to railway companies	3,566,997	15,177,063	13,120,014	31,864,074
Area granted to Hudson's Bay Company	1,210,000	3,087,000	2,092,000	6,389,000
Area of school land endowment ($\frac{1}{16}$ of area surveyed in sections	1,624,600	3,932,000	3,722,800	9,279,400
Area sold under irrigation system		76,672	980,850	1,057,522
*Area under timber licenses	1,079,300	1,119,200	1,353,100	3,551,600
*Area under grazing leases	82,700	3,009,100	2,902,400	5,994,200
*Area of forest reserves and parks	2,606,400	6,195,700	16,754,700	25,556,800
*Area reserved for forestry purposes (inside surveyed tract)	746,300	1,430,000	1,677,500	3,853,800
*Area of road allowances	973,000	1,464,000	1,276,500	3,713,500
Area of parish and river lots	505,200	82,500	118,600	706,300
Area of Indian reserves	433,860	1,119,454	1,367,974	2,921,288
Area of Indian reserves surrendered	87,560	344,414	302,228	734,202
*Area of water-covered lands (inside surveyed tract)	4,246,300	1,902,300	2,285,050	8,433,650
Area now available for entry (includes lands reserved for soldier settlement)	4,788,000	4,607,300	15,000,000	24,395,300
Total surveyed area	35,455,017	78,836,603	85,147,816	199,439,436

* Area not available for cultivation.

STATEMENT of Land Sales by Railway Companies having

Year.	Hudson's Bay Company.		Canadian Pacific Railway Company.		Manitoba Southwestern Colonization Railway Company.		Qu'Apelle Long Lake and Saskatchewan Railroad and Steamboat Company.	
	Acres.	Amount.	Acres.	Amount.	Acres.	Amount.	Acres.	Amount.
		$		$		$		$
1893			93,184	295,288	14,164	57,559	1,603	
1894	7,526	48,225	43,155	131,628	6,312	28,603	640	
1895	1,431	23,209	55,453	176,950	5,623	22,330	2,391	
1896	9,299	52,410	66,624	220,360	21,254	88,568	286	
1897	10,784	53,277	135,681	431,095	63,800	634,644	2,524	
1898	62,000	310,000	242,135	757,792	106,473	363,982	22,534	
1899	56,875	274,625	261,832	814,857	58,019	199,558	61,030	178,517
1900	70,196	352,631	379,091	1,152,836	133,507	437,449	18,932	53,974
1901	82,308	399,804	339,985	1,046,665	59,749	214,953	22,266	74,810
1902	269,577	1,412,332	1,362,478	4,440,500	206,411	713,365	39,835	147,365
1903	330,046	1,939,804	2,260,722	8,472,250	250,372	699,210	843,900	1,476,900
1904	141,857	879,910	857,474	3,516,864	29,522	113,303		
1905	139,721	865,905	411,451	2,045,800	80,342	296,936		
1906	236,191	1,863,375	1,012,322	6,015,060	83,418	360,889		
1907 (9 months to March 31)	69,158	742,221	851,083	4,817,682	3,051	22,645	1,353	16,789
1908	21,184	267,215	81,060	727,367	31,982	153,007	5,621	68,869
1909	25,449	288,836	29,331	383,399	10,396	84,845	37,662	380,371
1910	104,382	1,297,454	655,583	10,473,425	14,501	126,550	106,000	964,600
1911	267,038	3,747,768	715,095	10,372,661	20,313	284,859	113,533	1,237,204
1912	42,554	808,943	855,280	12,420,488	18,932	117,497	35,213	495,116
1913	53,581	1,128,806	447,158	6,348,352	2,768	48,639	15,395	255,399
1914	26,292	572,837	263,962	4,242,089	7,626	91,948	1,629	21,546
1915	16,400	306,550	151,262	2,496,872	489	5,508	1,292	19,118
1916	79,310	1,273,144	242,215	3,670,421	4,780	58,808	12,246	180,361
1917	254,941	4,234,244	405,764	6,612,040	12,470	165,245	21,533	331,596
1918	386,394	6,914,947	545,285	11,044,883	25,933	321,005	49,723	783,062
1919	285,561	4,978,950	602,555	10,580,669	5,289	67,214	33,838	527,670
Total	3,056,055	35,037,422	13,367,222	113,708,234	1,277,496	5,378,819	1,450,979	7,213,267

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Government Land Grants, and by the Hudson's Bay Company.

Calgary and Edmonton Railway Company.		Canadian Northern Railway Company.		Great Northwest Central Railway Company.		Total.		Average per acre.
Acres.	Amount.	Acres.	Amount.	Acres.	Amount.	Acres.	Amount.	
	$		$		$		$	$ c.
11,260						120,211	352,847	2 93
11,035						68,668	207,856	3 02
46,815						114,713	222,489	1 94
10,553						108,016	361,338	3 34
9,436						222,225	719,016	3 23
15,481						448,623	1,431,774	3 18
24,738	53,335					462,494	1,520,792	3 28
46,653	128,256					648,379	2,125,146	3 27
116,719	352,037					621,027	2,088,269	3 36
323,494	1,033,396					2,201,795	7,746,958	3 56
231,800	909,600	183,736	631,503	128,435	522,490	4,229,011	14,651,757	3 46
129,007	563,507	64,469	313,575	41,858	177,081	1,267,187	5,564,240	4 39
109,191	512,898	231,707	1,221,469	17,593	103,564	990,065	5,046,572	5 09
85,784	480,063	204,966	1,014,351	20,603	137,503	1,642,684	9,871,241	6 01
59,515	346,064	289,576	1,711,109	4,023	41,470	1,277,759	7,697,930	6 02
8,606	75,644	196,946	1,746,504	1,291	13,855	346,693	3,052,461	8 80
6,370	66,508			165	7,935	109,373	1,211,885	11 08
18,323	182,926	285,428	2,783,010	571	6,863	1,184,790	15,835,228	13 36
11,820	116,231	277,414	3,336,797	1,438	27,417	1,406,651	19,122,937	13 59
10,853	154,424	365,926	4,216,578	632	11,373	1,329,390	18,224,419	13 70
4,155	44,212	182,491	2,009,642	1,601	32,105	707,149	9,867,155	13 95
19,575	460,129	182,491	2,009,642			501,575	7,398,191	14 75
23,012	444,018			316	6,965	192,801	3,279,031	17 01
11,689	172,033			4,646	81,182	354,886	5,435,949	15 32
33,821	5 3,875	17,796	298,938	8,829	141,439	755,154	12,357,377	16 35
53,355	815,628	39,546	732,351	16,021	275,724	1,116,237	20,887,600	18 71
31,774	479,496	65,110	1,261,963	14,530	252,774	1,038,657	18,148,736	17 47
1,461,844	7,964,280	2,587,602	23,287,432	261,955	1,839,740	23,466,153	194,429,194	8 28

THE DOMINION PARKS.

The outstanding feature with regard to the Dominion parks during the past season was the marked increase in travel by motor. In the parks accessible only by railway there was a noticeable decrease in the number of visitors but the three parks accessible by motor roads had a very successful season. Buffalo and Waterton Lakes parks showed an increase of almost one hundred per cent while Banff, owing to the large influx of motorists, had at times as many visitors as it could accommodate. More than 2,300 cars registered at the park gate on the Calgary-Banff road carrying, it is estimated, 10,000 people, while the figures for Waterton Lakes park were 9,000 and for Buffalo park over 7,000. One of the most gratifying developments in this connection is the fact that the people of the western provinces are now increasingly taking advantage of the wonderful recreation facilities of the National Parks.

Important agreements vitally concerning National Parks were made with the Provinces of British Columbia and Alberta. Both definitely settled long outstanding matters in regard to which there had been conflicts concerning jurisdiction as between the Dominion and the Provinces. The agreements will contribute materially to the satisfactory and efficient administration of the National Parks.

By the British Columbia agreement the Dominion receives from the Province a ten-mile strip—aggregating about 628 square miles—along the Banff-Windermere highway for Dominion Parks purposes. The Dominion undertakes in that connection to complete within four years the construction of the Banff-Windermere highway. The completion of this highway will provide a "Circle" automobile tour of 500 miles largely through the most spectacular scenery of the Rockies. It is anticipated that this highway will attract thousands of automobiles from every part of the continent and thus each year bring millions of dollars into Canada.

Now that the war is over the active development of National Parks work promises to attract a huge foreign tourist traffic, to the great financial advantage of the Dominion.

Substantial progress was made in regard to the administration of the new Northwest Game Act and the year saw the entire fur trapping and trading industry of the north put under license and control.

An organization scheme was also developed for carrying out Canada's obligations under the Migratory Birds Treaty with the United States.

WATER-POWERS.

Last year attention was directed to the steps being taken to mobilize the water-power resources in preparation for the reconstruction period following the war. During the past year several important forward steps have been taken foremost amongst which was the formation of the Dominion Power Board for the correlation of data and the evolution of a master power policy designed to secure the best economic use of power and fuel resources throughout the Dominion.

In connection with purely water-power matters considerable constructive progress has been made and the preparation of a Water Power Bill to replace Section 35 of the Dominion Lands Act is a step of the first importance. It was found that more extensive and definite authority was required to make the administration of water-power under control of the Minister of the Interior effective than the existing legislation supplied; a new bill was therefore prepared to obtain unquestioned authority for water-power regulations.

The water-power regulations at present effective cannot be considered entirely satisfactory and during the past few years the Dominion Water Power Branch has been carrying on an extensive study into water-power legislation and administration in foreign and other British jurisdictions. With the return of peace it has been pos-

sible to secure printed laws and regulations from other countries which during the war were unobtainable, the translation and study of these is now in progress and it is expected that during the coming year a new set of regulations embodying the most enlightened thought of the day will be completed.

The effective co-operation of this department with other Federal and Provincial departments has been very satisfactorily maintained during the past year and in many cases very materially extended. Special mention may properly be made of the relations established with the Imperial authorities investigating Empire water-power resources; these have been instrumental in securing publicity concerning Canadian Water Resources throughout the English-speaking world.

NATURAL RESOURCES.

The free Dominion lands suitable for cultivation are quickly disappearing. In the past most of the inquiries received by the department related to lands in Western Canada and to meet these requests various reports and maps have been published from time to time. Latterly, however, there has been a growing demand for literature pertaining to the Central and Eastern Provinces of Canada and since the signing of the armistice the inquiries respecting their natural resources have increased tremendously.

The number of settlers and returned soldiers that are attracted by the possibilities of the more northerly areas of the Prairie Provinces continues to be large. The present situation in these regions is briefly summarized below:—

NORTHERN ALBERTA AND THE MACKENZIE BASIN.

Since Edmonton has been connected by rail with Athabaska, McMurray, Peace River, Spirit River and Grande Prairie, settlement has been gradually expanding in all directions.

In those areas north of the fifty-fifth parallel of latitude that have been specially reserved for returned soldiers by the department, settlers seem to favour the Grande Prairie, Peace River, Waterhole, Pouce Coupé, Spirit River, McLennan and High Prairie districts. With its excellent pasture grounds Northern Alberta has a great future in the raising of live stock and thanks to the prevalence of the dry warm chinook winds the snow never attains a great depth and consequently disappears very early in spring.

The mineralogist and prospector have been attracted by the mineral possibilities, but as is only natural in a country much of which is still far removed from transportation facilities, exploration so far has been very limited. Lode gold, iron and nickel ores have been discovered on the shores of lake Athabaska but there are no deposits of economic value under present conditions. In the foothills north of the Grand Trunk Pacific railway a coalfield extends from township 49, range 27, west of the 5th meridian in a northwesterly direction to township 59, ranges 7, 8 and 9, west of the 6th meridian. The coal is high-grade bituminous and at least one seam on Smoky river may be classed as anthracite. A great many seams are also exposed in the canyon above Hudson Hope, but only a few exceed 3 feet in thickness. Gypsum has been found in the valleys of the Peace, Slave and Mackenzie rivers. The deposits most likely to prove of commercial value are those occurring on Peace river and in the escarpment to the west of Slave river. Some beds of gypsum 20 to 60 feet in thickness are exposed for fifteen miles on Peace river at Peace Point.

Tremendous possibilities confront Alberta in the discovery of the latent petroleum resources. On the Mackenzie basin an exceedingly large area of possible oil-bearing country has never been explored. Drilling operations were unfortunately hampered by the exceptionally bad weather in 1919 but the work of the great oil companies will

be watched with the closest interest during the coming year, especially any work that may be carried out at Great Slave lake and at Fort Norman on the Mackenzie river.

Among other assets of this northern region must be mentioned the great fresh-water fishing areas. The commercial fisheries already established at lakes Athabaska, Lesser Slave and la Biche are making excellent progress in their output of pickerel, pike and tullibee (whitefish). Great Bear lake which is abundantly stocked with varieties of fish far superior to those found in any of the other northern lakes, is still untouched.

NORTHERN SASKATCHEWAN.

In northern Saskatchewan explorations and investigations have not been carried out to the same extent as in Northern Alberta. Work that will prove invaluable has already been accomplished by the Forestry and Dominion Water Power Branches. In those districts likely to be settled within the near future the power possibilities of the more important rivers such as the North Saskatchewan, Saskatchewan, Sturgeon-weir and the Churchill are being carefully examined with a view to making a satisfactory computation of the water-power prospects in this part of the Dominion.

Valuable timber is situated northwest of Prince Albert. There are also mineral possibilities in these northern areas but no systematic exploration has yet been undertaken. Nickel and copper sulphides occur at the east end of lake Athabaska but they are not of sufficient importance to warrant their present exploitation. Gold has been discovered in quartz veins at Amisk lake but there has been practically no development work. The undoubted existence of copper and gold in the adjoining territory in northern Manitoba augurs well for their discovery in northern Saskatchewan.

These unexplored regions have most useful resources in furs, game and fish. The fur-bearing animals contribute annually over $1,000,000 to Saskatchewan trappers, and commercial fishing is now carried on in many lakes of which Ile à la Crosse, Doré, la Plonge, la Ronge and Buffalo are some of the most important.

NORTHERN MANITOBA.

In a country that is rather remote from any large centres of population the greatest incentive to its rapid development lies in the chance of discovering very rich gold quartz or other precious minerals.

In Northern Manitoba the Canadian mining world has recently been stirred by events that make one recall the early Klondike days. Allusion is made to the gold discovery late in August, 1919, at Copper lake, which has been declared by reliable mining experts to be rich. The district stretching from lake Athapapuskow and the Saskatchewan boundary on the west to Wekusko or Herb lake on the east, about 100 miles in all, has already firmly established itself as a great mineral area. There are the gold-bearing quartz veins of Wekusko (Herb) lake and the rich copper sulphide deposits of Flin Flon and Schist lakes. In all the history of mining there has probably been no parallel to the achievements of the famous Mandy Mining Company at Schist lake. This company, during the war, was enterprising enough to haul the wonderfully rich copper ore 40 miles by teams, then ship it 125 miles by boat and barge to the Pas and from there it had to be taken 1,200 miles by rail to the smelter at Trail, British Columbia.

In order to encourage the raising of reindeer in the north lands of Canada a tract of 75,850 square miles was specially reserved in July, 1918, for their domestication. This tract extends from Churchill river in northern Manitoba as far north as the sixty-first parallel of latitude and is bounded on the west by Reindeer river and lake and the one hundred and second parallel of longitude, and on the east by the Hudson bay. Permits for free grazing privileges for reindeer are procurable through the department. A question that is at present engaging the attention of a recently

appointed commission is the domestication of the musk ox, and if this is at all feasible, those regions of northern Canada that have so often been misrepresented as barren, will be the means of furnishing man with abundance of excellent food and clothing.

UNCULTIVATED LANDS.

In view of the gradual exhaustion of Dominion lands suitable for agriculture and the advisability of extending settlement, wheresoever possible, in those areas not too far removed from the railroads, the department has prepared lists of lands that are now in private ownership but are not being cultivated owing to the non-residence of the present holders. These lists which contain the names and addresses of the owners of such unoccupied and uncultivated lands, have been prepared, after a considerable amount of work, for the provinces of Manitoba, Saskatchewan, Alberta, Nova Scotia, New Brunswick and Prince Edward Island. Maps also have been published illustrating the exact location of such lands in Western Canada. Though these lists and maps are inevitably incomplete they have been extremely useful in meeting the requirements of those wishing to purchase good agricultural land in a more or less settled environment. With the co-operation of the Department of Immigration and Colonization in the circulation of these lists in the United States and Canada it is expected that many intending settlers will be enabled to communicate directly with the owners of the lands they particularly desire.

The unoccupied lands that have been listed up to the present involve an area of nearly 33,000,000 acres allocated as follows:—

Province.	Acres.
Prince Edward Island	40,671
Nova Scotia	192,806
New Brunswick	166,876
Manitoba	2,448,000
Saskatchewan	16,617,030
Alberta	13,286,760
	32,752,053

The acreage of the unoccupied and uncultivated lands in the other provinces of the Dominion is not included in the above table, but the work necessary for its determination and the preparation of lists in connection therewith has already been commenced.

The advantages that will ultimately accrue to the Dominion of Canada by the cultivation of a large portion of these 33,000,000 acres will be readily understood when it is borne in mind that in 1919 the total area under field crops was only 51,155,897 acres.

EASTERN CANADA.

Owing to the very varied nature of the inquiries received from Western and Eastern Canada and the United States in regard to the resources of the eastern portions of the Dominion, the department has found it expedient to give greater facilities for the acquiring of information relating to these resources which are now keenly interesting the American capitalist and investor. By the investigation of problems relating to the development of Canada's natural resources and the circulation of the results of such research in reports, bulletins, news items, magazine articles and lantern slide lectures it is hoped to diffuse a much wider knowledge of the Dominion throughout England, Canada and the United States and incidentally to place industrial interests in touch with the proper recognized authorities for any information they may wish to ascertain. The department is co-operating with the other Federal departments and with the Provincial Governments in this matter.

THE DOMINION OBSERVATORY, OTTAWA.

During the fiscal year 1918-1919 observations with the meridian circle were obtained on 125 nights; they were devoted in part to determinations of clock error for the time service and for longitude work, and in part to a continuation of work on the list of latitude stars mentioned in previous reports; a series of observations was also made on the new star in Aquila, for determination of its position. Two observers were engaged throughout the year and a third for a part of the year.

Field observations for latitude and longitude were carried out at two stations, Ste. Anne des Monts, Quebec, and the Pas, Manitoba. The longitudes were determined directly from Ottawa by electric telegraph, the latitudes by Talcott's method.

The time service has been maintained as in previous years. There are now nine secondary master-clocks synchronized continuously from the Observatory; these in turn control 384 clocks and dials of various kinds, including the tower clock at the Observatory and the city post office. In addition, relays beating seconds are maintained in two offices in the city, one clock is synchronized every hour; time signals are sent out by telegraph and telephone, and the time is recorded on the various seismographs at the Observatory. A comparison is made daily with Washington time by means of the wireless time-signals sent out by Arlington; a small systematic difference is present, which may be due to lag in the Arlington transmitting apparatus. A test is in progress of various box chronometers under different temperature conditions, mainly for testing and possibly improving the temperature compensation.

The Equatorial Telescope was utilized as heretofore for the purpose of obtaining radial velocities of stars. A total of 241 spectrograms were taken, each of which represents an exposure of approximately 90 minutes.

The orbits of 5 spectroscopic binaries were determined and the work on them compiled for publication. Also a number of plates of various stars were taken and measured. The measures of fourteen of these stars whose velocities were considered constant were compiled and will appear in a later publication. A large number of spectrograms were obtained of the star that blazed forth on June 8, Nova Aquilæ No. 3, an object of universal astronomic importance. An exhaustive study was made of its spectrum and the successive changes therein.

The telescope was placed at the service of the public as usual on Saturday nights, and a large number of visitors availed themselves of the opportunity for viewing the heavens.

With the enlarging camera of the equatorial telescope, now equipped with graduated circle and vernier reading to tenths of a degree (so that the lines of the directions of the solar axis and of the diameter at right angles to it are indicated from day to day, as well as the "East-West" line) 57 photographs registering sun-spots, were made.

The 24·5 m. coelostat reflecting telescope and 7 m. grating spectrograph have been utilized as formerly in observing spectra of the sun—center of disc, limbs and points intermediate—along with iodine absorption spectra and arc emission spectra, 9 strips of spectra being photographed at each observation. In all 263 plates were made, comprising 1,160 observations, covering the problems of solar rotation, convection, pressure, distance and the still doubtful Einstein gravitational effect on the wave-lengths of solar spectrum lines.

To obtain the International standard electric arcs a 220-volt, D.C. generator has been installed.

The continued observation of the Solar rotation, by spectroscopic methods, will undoutedly prove of great value in unravelling the causes of meteorological variations and their sequences which are so important to mankind.

Photometric work has been continued with the photographic telescope as in the past years. Exposures have been made on almost every fine night except when there

was moonlight. 121 plates with about 250 exposures were obtained. The Nova has been closely followed; unfavourable weather conditions prevented the finishing of observations on several stars on the regular programme.

Work in connection with the magnetic survey of Canada carried on by the Observatory was continued during the year. There are now about 500 stations distributed between the Straits of Belle Isle and Prince Rupert on the Pacific Coast, at each of which the magnetic elements of declination, inclination and intensity have been observed. For the first—declination—or variation of the compass, there is much public demand. The past season was devoted to again observing at some "repeat" stations from Sydney to Winnipeg, 38 in number, to determine the secular variation or annual change, necessary for the reduction of all observations to a common epoch. It is planned to publish all the magnetic data with accompanying maps covering the whole of Canada, for which there are frequent requests.

The three seismographs have been in constant operation as well as the deformation instrument for the measurement of the tides of the solid earth. During the fiscal year 137 earthquakes were recorded in different parts of the earth, as no severe earthquake fails to be recorded at Ottawa. The records of the seismographs at Halifax and at Saskatoon, belonging to the Observatory, are of much value combined with those of Ottawa in the accurate location of earthquakes in the ocean or in uninhabited parks.

The undagraph at Chebucto Head, N.S., by which every ocean wave is recorded and correlated with the tremors of such waves through the earth by the seismograph continues in active operation.

As heretofore monthly bulletins of the earthquake records are issued and distributed amongst the principal earthquake stations of the world. It may be of historic interest to note that the abdication of the Kaiser on the 9th of November and the Armistice two days later were recorded on both photographic seismographs.

Gravity observations have for the time being been discontinued as no observer was available.

Several series of experiments were carried out to determine the exact amount of the variations in the frequency of the city electric light circuit. This is of interest in view of the possibility of operating a general time service from the light circuit, the generators in the power house being properly synchronized. This would mean that by simply making a connection with the ordinary light circuit and a suitable dial, accurate time could be obtained in any household where there is electric light.

DOMINION ASTROPHYSICAL OBSERVATORY, VICTORIA, B.C.

The first work of this institution commenced in May, 1918.

The mounting of the telescope was finally erected in October, 1916, and the observatory building was completed about the end of the same year. The mirror and other optical parts were, however, not ready, the delay being principally due to difficulties in the way of obtaining a testing place. It was confidently expected that the work would be finished in the early summer of 1917 and consequently the director and assistant astronomer moved from Ottawa in July, 1917, to do the considerable necessary preliminary work required in preparation for the regular observing programme.

The mirror was nearly finished in August and again in October, but in both cases the work in one part of the surface was carried slightly too far, necessitating considerable repolishing and refiguring. It was not until April 3, 1918, that the figuring was finally completed, tested and accepted. In the meantime the spectrograph had been completed, arriving in Victoria in December, 1917. It was attached to the telescope, tested, adjusted, and the dispersion tables required for its use were prepared.

The principal mirror and other optical parts were shipped from Pittsburgh in a through express car, reaching Victoria on April 29, 1918. As all the preliminary work

had been carefully attended to, the mirror was quickly installed and collimated, and the first star spectrum was photographed on May 6.

Between that date and March 31, 1919, 1,729 star spectra have been obtained on 143 nights. In addition the telescope was used for direct photography and for miscellaneous experimental work on 20 nights additional, making 163 nights on which observations were made during an interval of 329 days. Many of these nights were broken and interrupted by clouds and on some only one or two plates were obtained. The "seeing" generally was good and the first year's work with the telescope has shown that the climatic conditions at Victoria are even better than was expected.

The definite programme under observation of which these spectral plates constitute a part, consists of a list of some 800 stars from about 5·5 to 8·0 magnitude whose radial velocities are to be determined. This list was selected from those stars in Boss's Preliminary General Catalogue which are north of the equator and whose velocities have not been previously determined. It was compiled in co-operation with the Mt. Wilson Observatory, where the velocities of a number of the Boss stars had already been obtained with a spectrograph attached to the 60-inch reflector and where the instrumental capacity will shortly be largely increased by the addition of the 100-inch reflector. By this co-operation duplication of work is reduced to a minimum and the velocities of all the stars in the Boss Catalogue, especially important as their proper motions are known, within reach at the two observatories will be obtained in the shortest possible time.

In the measurement of the spectra of stars in this list, 54 spectroscopic binaries were discovered, stars whose velocity when reduced to the sun was found to vary, thus indicating duplicity of the systems and showing that the stars whose spectra were visible were revolving around companions so close together as to be impossible of separation visually.

In addition to and partly complementary to the main spectroscopic work on the programme, the orbits of the spectroscopic binaries, Geminorum and Boss 8170 were determined. Further work was done and important results obtained from the spectroscopic binary 12 Lacertae, and a large number of spectra were obtained of Nova Aquilae No. 3, the brightest nova that has appeared since the spectroscope has been applied in stellar work. Many of these spectra were measured and interesting and useful information obtained.

In addition to the main programme of spectroscopic observations, the telescope was, as previously stated, employed on 20 nights in the direct photography of stars, clusters, and nebula. Many of the resulting photographs were in the nature of experimental trials to determine the best adjustment of the instrument and in preparation for an investigation, for obtaining the magnitudes of the faintest stars in selected regions of the sky. However, a number of direct photographs of star clusters and nebulae were obtained, sufficient to clearly show the high quality of the optical parts. The star images on these plates are remarkably sharp and well defined, the minimum diameter in good seeding being only slightly over one second of arc which at the focus of the 72-inch telescope is about one six-hundredth of an inch.

In connection with the direct photography, a complete investigation of the quality of the 72-inch mirror and also of the Cassegrain combination was made under varying temperature conditions by means of the Hartmann extra-focal method and the aberrations or departures from theoretical perfection of thirteen zones, two inches apart, of the surface were measured. Under constant temperature conditions the maximum longitudinal aberration at the principal focus is less than one-fourth of a millimetre, indicating a remarkably fine figure, but this was increased to more than three millimetres when the daily swing of temperature change at Victoria was only slightly above the average. These results indicated the necessity of protecting the mirror as far as possible from the daily change, which was effected by completely encasing the closed section of the tube in a felted cotton covering, with a thick blanket cover at the top,

removable when observing. The change of temperature within this covering and around the mirror was reduced to about one-third of that in the dome and consequently rarely exceeds three of four degrees Fahrenheit. By this means the aberration due to temperature change was reduced to about one millimetre, an amount well within the disturbance caused by atmospheric tremor even under good seeing conditions.

The performance of the telescope mechanically, is also very gratifying and the whole equipment for convenience and accuracy of working leaves nothing to be desired. I have no hesitation in stating that this installation, not only in size, but in perfection of design and workmanship and in ease and facility of handling, is far in advance of any existing telescope.

Reclamation.

DRAINAGE.

Owing to the increasing importance of the work relating to drainage which had been performed by the Irrigation Branch, it was considered advisable to supercede that Branch of the Department by the Reclamation Service. The underlying cause for increased drainage activity was the removal, by legislation, of apparently conflicting interests between the Federal Government and the Governments of the provinces of Alberta and Saskatchewan regarding drainage problems. The solution was found in a compromise which is proving eminently satisfactory to both sides. The Government of Manitoba has not up to the present passed legislation to enable it to benefit by the new arrangement but it is anticipated that action in this direction will soon be taken.

IRRIGATION.

The year 1918 was perhaps the driest on record and following, as it did, an exceedingly dry year, there was practically no moisture in the soil and crop failure was the result in most localities.

The recurrence of a number of dry years has forced upon the farmers of the semi-arid region the conclusion that it is unsafe to depend upon the natural fertility of the soil and rainfall alone but that irrigation is essential if crops are to be assured. That this lesson has been well learned is evidenced by the largely attended meetings held last winter and spring, as well as by the formation of Irrigation districts and an Irrigation district association in Alberta. Unfortunately, there is only sufficient water available to irrigate about 10 per cent of the land requiring irrigation and plans for development must be limited by a consideration of this fact.

IRRIGATION SURVEYS.

As war conditions made necessary a general policy of retrenchment, no large survey parties were maintained in the field. A reconnaissance was made in connection with the Lethbridge Northern Project to determine the feasibility of extending the canal system as originally planned to serve land in the Sundial District and it was found that this area might be included at a slight additional cost per acre for the whole project.

HYDROMETRIC SURVEYS.

In order to economize, only the most important hydrographic work was undertaken and a number of the engineers combined irrigation inspection duties with stream measurement. The records obtained are exceptionally valuable as they show the conditions to be expected in an abnormally dry season.

WATER SUPPLY INVESTIGATIONS.

Investigations were continued into the question of domestic and stock water supply and considerable data has been gathered which will be valuable for use in bettering conditions. As a result of this investigation a number of cancelled stock watering reserves have been rehabilitated in the interest of the Better Water Supply scheme for Alberta.

MINING, ETC.

Very pronounced activity has been shown during the year in prospecting and mining, particularly in the northern portions of Manitoba and Saskatchewan. In Manitoba there are three mineral districts in which rich deposits of gold, silver and copper sulphide have been found, and active mining operations are being conducted at several points. Ore is being shipped in considerable quantities from The Pas District, notwithstanding the adverse conditions due to the absence of railway transportation. This ore is hauled 40 miles by team, is carried 125 miles by barge, and is transported over 1,200 miles to the Trail smelter in British Columbia, being handled several times in transport. Only marvellously rich ore could stand such treatment.

Boring operations for the discovery of petroleum and natural gas are being actively prosecuted in Alberta and British Columbia with very gratifying results. Over 15,000 leases of such rights have been granted, and discovery has been made at different points of natural gas in large quantities, which is being used for domestic and commercial purposes, as well as petroleum in considerable quantity. Three separation plants have been erected in the Okotoks District, and the production during the past year from that field was approximately 14,000 barrels of 42 gallons each. In the Peace River District a large number of wells are being bored, and it is confidently expected that before the close of the present year oil in commercial quantity will be found. An absorption plant has been erected at Calgary for the extraction of gasoline from the wet gas produced in that part of the Province, which it is predicted will materially increase the aggregate output.

FORESTRY.

The policy of economy followed during the war was continued in the work of the Forestry Branch throughout the year. No new lines of work requiring large expenditure were opened up. The summer season was not a specially dangerous one for fire and the expenditure on the work of fire fighting was comparatively low and the loss from fires small. The fire situation in Manitoba has been much improved by the legislation requiring the taking out of permits before setting out fire for the clearing of land. Similar legislation was passed by the province of Saskatchewan but no provision was made for an organization to carry out the law. The province of Alberta has not yet passed such legislation. The following are the most important causes of fire, in order of their importance: unknown, settlers, railways, campers and travellers.

The work on the forest reserves has been carried on with satisfactory results. Improvements for the protection and administration of the reserves have been continued. These include houses, cabins, roads, trails, telephone lines, lookout towers, etc.

Of special importance was the considerable increase in the timber operations on the reserves during the year. This increase was due in part to the high cost of lumber and of fuel. Timber operations are carried on with more care in regard to protection against fire and the reproduction of the forest, as the operators are gradually becoming educated in this respect.

During the last few years there has been remarkable development in the use of the forest reserves for grazing, as the stock owners have come to appreciate the value

of the range; and during the past season the number of stock grazed was more than double the number grazed the previous year. This large increase was partly due to the serious feed situation in Southern Alberta resulting from dry weather, when about 25,000 head of stock were tided over the crucial period by being taken into the reserves.

The regulations for grazing give special consideration to the small owner and are framed to make the forest resources available to the largest number of people possible. This policy has led the settlers to organize themselves into stock or grazing associations which is proving the best means of utilizing large areas.

The increasing demand for grazing privileges has made it necessary to have more exact information in regard to the resources on the reserves, and a start at this work has been made in Alberta, grazing reconnaissance surveys being made on several of the reserves.

The forest survey of the plot set aside for a forest experiment station on the military reservation at Petawawa, Ontario, was nearly completed and several sample plots have been set apart for special study. These plots, which are excellently situated for the study of typical pine and spruce areas, will in time give valuable information in regard to the development of stands of various compositions under different conditions of soil, light, and moisture.

On representations made by the Imperial Munitions Board a branch of the Forest Products Laboratories was established at Vancouver for testing airplane timbers. This laboratory will later develop more general studies of British Columbia woods.

Several important bulletins were issued during the year.

W. W. CORY,
Deputy Minister.

PART I.

DOMINION LANDS

DOMINION LANDS

REPORT OF THE COMMISSIONER, J. W. GREENWAY.

	To March 31, 1918	To March 31, 1919.
Applications for Patent—		
Number examined	45,752	33,573
New applications	20,993	16,791
Applications accepted and notifications sent out	19,332	11,246
Certificates of recommendations sent out	.....	4,706

REPORT OF THE CHIEF INSPECTOR OF DOMINION LAND AGENCIES, H. G. CUTTLE.

During the year I have held a great many investigations in connection with Dominion Lands, many of which were under oath authorized by Order in Council.

I visited most of the Land Offices in Manitoba, Saskatchewan, Alberta, and British Columbia during the year, and found it necessary to recommend the appointment of an auditor, which was done in January of this year. The general condition of the offices was good and the staffs much better equipped to handle seed grain and other collections than in former years.

During the past year the entire seed grain and relief distribution and collections have been added to my office, and a great deal of extra work was caused by the winding up of the seed grain distribution for 1918, but I am pleased to be able to report that this is now in good order and the work in this department up to date.

In referring to the seed grain collections for the past year, I beg to say that the amount collected was approximately $1,307,513.33, which I consider very good when the fact that such a large proportion of the crop was a total loss owing to the early frosts and drought. The total amount collected to March 31, 1919, is $9,201,601.84.

In referring to the seed grain distribution for the present season, I would say that up to the present time applications for seed have been approved for 149,001 bushels wheat, 154,545 bushels oats and 5,521 bushels of barley. This was on the applications of 3,418 settlers, and 10 of these have since cancelled their applications, having made other arrangements for procuring same, amounting to 359 bushels wheat, 642 bushels oats, and I expect that six or seven hundred more applications will have to be dealt with before the close of seeding.

Two Homestead Inspectors are also attached to my office. Their duties are the taking of applications for patent in districts not served by sub-land offices and a great benefit has been derived by the settlers from their work, several hundred applications having been taken by them. They also hold special investigations into seed grain and other matters.

The new auditor, during the past two months, has made special audits of the land offices at Moosejaw, Swift Current, Saskatoon and Edmonton. Many things which required adjustment were found and I am pleased to report that a marked improvement is already shown in the general conduct of these offices.

REPORT OF THE INSPECTOR, O. NEFF, OF DOMINION LAND AGENCIES, MOOSOMIN, SASK.

Agency.	Homestead entries granted.	Land Sales.			S. A. Scrip.	Applications for Patent received.	Land Entries Cancelled.	Permits Issued.	
		Ordinary and School Lands.	Preemptions.	Purchased Homesteads.				Timber.	Hay.
Battleford	142	29		55		746	453	201	977
Dauphin	424	35				332	237	556	665
Moosejaw	206	24		126		3,060	223	1	1,236
Prince Albert	535	51		6		749	284	856	948
Saskatoon	123	68	1	189		1,568	169	101	1,146
Swift Current	187	15	3	134	1	5,962	283	152	985
*The Pas	1	1						47	35
Winnipeg	389	64				715	453		
Total	2,007	287	4	510	1	13,132	2,102	1,914	5,992
Compared with 1917-18	4,323	414	569	128	5	13,246	3,326	1,422	6,288
Compared with 1916-17	6,714	359	1,010	157	1	13,351	4,571	1,367	6,235

*The Pas Agency was closed Feb. 18, 1919, and a sub-agency and mining recorder's office opened.

SESSIONAL PAPER No. 25

DOMINION LANDS SUB-AGENCIES—Manitoba and Saskatchewan.—Work Performed during the Departmental Year ending March 31, 1919.

Name.	Sub-Agency.	Applications for			Applications for		Applications for	
		Homesteads.	Purchased Homesteads.	Preemptions.	Patent.	Inspection.	Timber permits.	Hay permits.
T. G. Ross	Assiniboia	43	3		495	58	5	146
Mrs. M. Bucke	Brandon	15			12	7		4
J. Cusack	Empress	11			449	18	5	26
Wm. Banks	Gull Lake	8			402	30		26
J. S. Wiebe	Herbert	3			7	10		20
A. Reid	Kerrobert	4			176	3		55
J. H. Elliott	Kindersley	4			151	5		24
W. H. Holland	Lloydminster	16	1		47	14	6	55
C. H. Stockdale	Maple Creek	9			616	16	81	137
J. McCordic	Meadow Lake	22			13	10	17	74
A. Featherstonhaugh	Macklin				3	1		
W. Young	Melfort	82	1		163	22	15	31
J. Deans	North Battleford	44			75	34	25	156
J. McGurrac	Nokomis	8			47	7		20
W. Giroux	Ponteix	39			817	46		3
D. McMurphy	Preeceville	30			190	20	5	46
V. W. Johnston	Rossburn	1						
B. T. Tucker	St. Rose du Lac	30			9	6	4	44
J. H. Canham	Sprague	8			2		1	5
E. M. Reid	Swan River	4			6	9	1	8
J. W. Hanger	Shellbrook	17			119	13	56	12
D. Hughes	Turtleford	26			64	32	11	34
Wm. Buxton	Tisdale	148	1		151	50	32	44
F. N. Rowe	Wynyard	5			55	3		40
T. A. Underwood	**Weyburn	11			49	8		46
J. A. Duncan	Yorkton	8			51	6		9
W. B. McLellan	*The Pas	1					4	
M. Langstaff	Wadena	80			113	49	4	59
Total		677	6		4,282	477	272	1,124
Compared with 1917-18		1,794	55	254	5,552	1,548	395	1,377
Compared with 1916-17		2,364	72	375	5,850	2,175	418	1,406

*The Pas—This office was opened February 18, 1919, and the same official is Mining Recorder.
**Weyburn Sub-Agent—J. S. Hamilton from May 14 to August 15. G. Lythgoe, November 6 to November 30. T. A. Underwood, appointed March 5, 1919.

STATEMENT showing principal work performed by Homestead Inspectors in Manitoba and Saskatchewan for Departmental Year ending March 31, 1919.

Name.	Headquarters.	Land inspections made.	Applications for patent made.	Miles travelled.	
				Wagon.	Rail.
D. Anderson	Battleford	211	23	5,840	70
A. C. Elliott	"	180	64	4,568	3,175
T. Martin	Dauphin	135	77	4,643	5,103
T. Secord	"	140	11	3,023	446
G. L. Speer	"	152	132	5,106	2,113
J. B. Boucher	Prince Albert	155	3	3,367	866
H. Baldwin	"	203	7	3,816	904
Wm Morrison	"	227	26	3,997	3,305
J. F. McKenzie	"	210	2	3,934	2,249
E. J. Hober	Moosejaw	160	12	6,533	3,344
A. Hamilton	"	154	91	3,245	12,230
W. Erratt	"	270	16	4,816	1,080
C. E. Barr	"	195	73	3,547	5,062
J. A. Balfour	Saskatoon	102	32	1,801	3,400
A. Smyth	"	232	62	7,660	7,524
F. M. Collins	"	108	75	1,960	2,704
A. Henke	"	210	19	4,568	2,233
A. E. Mosses	"	177	197	5,327	614
Geo. McGowan	Winnipeg	469	166	5,424	3,450
W. D. Gillespie	"	194	63	4,034	3,730
H. L. Mabb	"	444	124	4,059	2,495
R. Reykdal	"	222	41	2,532	1,179
W. Lagimodière	"	284	67	3,784	3,879
L. Lepine	"	179	289	2,370	4,522
P. McLaren	Swift Current	227	52	4,730	3,069
A. L. Roth	"	33	12	610	1,623
J. Furnis	"	178	41	3,870	275
D. W. Hart	"	160	77	4,191	135
R. G. Mackey	"	96	22	1,492	670
Wm. Shields	"	64	16	1,152	.....
W. J. Mayberry	"	63	96	1,492	508
Total		5,834	2,038	117,491	81,957
Compared with 1916-17		7,001	3,805	136,958	98,678
Compared with 1917-18		6,196	3,022	123,914	95,312

REPORT OF THE INSPECTOR OF DOMINION LANDS AGENCIES, J. W. MARTIN, CALGARY, ALTA.

DOMINION LANDS AGENCIES.—Principal Transactions for the Departmental Year ending March 31, 1919.

Period.	Homestead entries granted.	Land sales.			Applications for Patent received.	Land entries cancelled.	Permits issued.	
		Ordinary and school Lands.	Pre-emptions.	Purchased Homesteads.			Timber.	Hay.
Calgary	220	23	1	1	3,004	288	387	1,153
Edmonton	844	87			1,684	926	1,252	1,931
Grande Prairie	558	28			383	265	324	368
Kamloops	31	26			118	28	339	36
Lethbridge	161	19	4		1,547	190	466	389
New Westminster	13	1			19	11		
Peace River	384	21			325	140	271	423
Revelstoke	10	5			14	14	89	
	2,221	210	5	1	7,094	1,862	3,128	4,300
1917-18	6,386	347	231	74	7,481	2,920	4,571	2,988

DOMINION LANDS SUB-AGENCIES.—Work performed during the Departmental Year ending March 31, 1919.

Name of Sub-Agent.	Sub-Agency.	Application for.			Application for.		Application for.	
		Homesteads.	Pur. Homesteads.	Pre-emption.	Patents.	Inspection.	Timber.	Hay.
							Permits.	
Spicer, S. E.	Alsask	7			478	9		67
Rennison, G. M.	Athabasca	23			56	17	47	113
Carlson, A. W.	Burlingville	54			22	18	10	121
Glover, Frank	Edson	6			61	7	6	15
Brown, Alex.	Entwistle	9			77	4	24	41
Cusack, John	Empress	26			523	20		30
McGowan, J.	Frog Lake	16			29	9	8	16
Potts, Cecil	Fort McMurray					1		1
Barber, J. C	Ft. St. John, 11 mo.	16			14		2	2
Morden, A. L.	Ft. Vermilion, 11 mo.	21			1	5	6	53
Requier, E. E.	Donnelly	29			35	8	63	20
Wenman, Wm.	Golden	4			7	3	20	1
Trenaman, J. C.	Hanna	6			380	16		41
Holland, W. H.	Lloydminster	10			19	5		45
Whitaker, J. M.	Mosside	36			45	6	4	16
Robinson, A. W.	Medicine Hat	31		1	571	39		110
Rogers, M. J.	Orion, 4 mo.	2			33	5		15
Saloway, Geo.	Pouce Coupe	68			89	28	45	26
Fleming, W. S.	Provost, 7 mo.	10		1	149	9	2	48
McDonald, S. A.	Pine Creek	6	1		59	9	50	17
Hankinson, R. T.	Ry. Mt. House	11			49	19	39	25
Gee, R. C. P.	Red Deer	15			38	11	7	47
Lacey, J. E.	Salmon Arm	5			13	5	3	
Gray, W. B.	Stettler	11			151	12		42
Fildes, J. M.	Spirit River	56	3		69	21	69	80
LaPlante, J. R.	St. Lina	45			61	26	19	20
Racicot, B.	St. Paul des Metis	49			80	24	64	107
Mace, Job	Vermilion	19			144	35	2	55
Todd, H. E.	Wetaskiwin	9			8	15	55	28
McLeod, W. H.	Wainwright	16	1		89	15	9	11
Hughson, W. S.	Whitford	7			41	7	56	2
Alton, B. C.	Westlock	22			85	11	81	101
Wenham, Mark.	Yeoford	9			26	7	3	19
Rayment, M.	Youngston	14			776	38		75
Totals		688	5	2	4,288	464	694	1,410
1917-1918		1,283	44	109	4,391	1,354	799	1,069

SESSIONAL PAPER No. 25

STATEMENT showing principal work performed by Homestead Inspectors in Alberta and British Columbia for Departmental Year ending March 31, 1919.

Name of Homestead Inspector.	Headquarters.	Period.	Land Inspections made.	Applications for patent taken.	Miles Travelled.	
					Wagon.	Rail.
Benzie, J. M.	Kamloops		387	25	5,932	1,901
Cunningham, T. J	Edmonton		185	40	3,985	4,151
Cook, H	Revelstoke		139	1	753	4,724
Doze, I. S	Edmonton		358	11	3,958	2,110
Fletcher, Jos	Grande Prairie		224	1	4,869	
Fleming, G. W	Calgary		148	6	6,282	2,298
Griffin, A. H	Edmonton		398	35	5,434	2,309
Grasse, P. L	Edmonton		173	1	3,361	4,725
Hagen, S. C	Edmonton		398	51	4,962	2,534
Horne, J. A	Edmonton		248	3	6,718	3,050
Kembry, R. A	Calgary		315	16	5,870	2,438
Key, A. E	Peace River		101	13	1,562	3,719
Magee, W. D	New Westminster		92		1,073	3,590
McMullen, J. E	Peace River		177	13	3,426	1,885
McConnochie, A	Edmonton	1 month	19	1	268	367
McCowan, H. S	Edmonton		411	26	2,877	2,691
Newton, T. M	Grande Prairie	5 months	45		1,901	
Scott, Hugh	Lethbridge	7 months	135	20	5,568	708
Switzer, Wm	Lethbridge		190	1	5,097	690
Tempany, Wm	Calgary		204	13	7,174	4,448
Woodlock, P. A	Calgary		351	66	5,471	7,886
Wynne, A. E	Edmonton		159	36	4,434	2,200
Totals			4,857	379	90,975	58,424
1917-18			5,416	614	95,707	61,106

REPORT OF THE AGENT OF DOMINION LANDS, D. J. ROSE, BATTLEFORD, SASK.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Homestead fees	142	$ 1,420 00	
Purchased homestead fees	1	10 00	
Improvements	31	1,818 00	
Land sales, cash	29	2,347 95	
Pre-emption payments	94	28,875 24	
Purchased homestead payments	67	9,686 77	
Searches, map sales, office fees, etc	245	61 25	
Applications for patent received	746	.....	
" " inspection received	106	.....	
Entries cancelled	453	.....	
Sundries, townsite sale	11	213 60	
Total			$44,432 81
Timber and Grazing Branch—			
Timber permits	199	$ 308 00	
" seizures, excess	30	148 98	
Hay permits	467	1,149 30	
" " excess payments	13	27 30	
Grazing rentals, cash	412	1,972 20	
Total			3,605 78
Forestry Branch—			
Permit fees and rental	290	$ 421 25	
" " " excess payments	3	4 00	
Seizures	1	8 00	
"	11	57 85	
Grazing rent, etc	97	1,153 15	
Hay dues	41	189 50	
Total			1,833 75
Mining Lands and Yukon Branch—			
Mining fees	29	$123 00	
Rental	1	11 32	
Total			134 32
School Lands Branch—			
Timber permits	2	$ 12 75	
" " excess payments	2	10 00	
Hay permits	528	1,195 15	
" " excess payments	12	24 70	
Grazing rentals	277	3,735 56	
Cultivation permits	2	205 00	
Total			5,183 16
Miscellaneous—			
Seed grain and provision repayments	82	$7,572 42	
Sundries	3	13 45	
Total			7,585 87
Grand total			$62,775 69

REPORT OF THE AGENT OF DOMINION LANDS, W. E. TALBOT, CALGARY, ALTA.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Soldier grants	90	.....	
Homestead fees	220	$ 2,180 00	
Pre-emption fees	1	10 00	
Purchased homestead fees	3	30 00	
Improvements	87	5,028 46	
Land sales	23	3,164 06	
Pre-emption payments	1,006	338,085 30	
Purchased homestead payments	209	33,779 98	
Searches, etc.	354	88 50	
Applications for patent	3,004	.....	
" " cancellation	219	.....	
Entries cancelled	288	.....	
Total			$382,366 30
Seed Grain Branch—			
Seed grain and provision payments	595	$83,974 46	
Total			83,974 46
Timber and Grazing Branch—			
Ground rent	26	$2,602 26	
Royalty on sales	27	6,392 90	
Timber permits	210	4,454 14	
" seizures	5	299 90	
Hay permits	290	1,476 70	
Grazing rentals	493	7,012 12	
Sundries	14	28 00	
Total			22,266 02
Forestry Branch—			
Permit fees and rental	179	$10,169 23	
Seizures	8	858 35	
Grazing rent	124	4,520 73	
Hay dues	40	175 75	
Total			15,724 06
Irrigation Branch—			
Sales	2	$171 65	
Reservoir rental	1	116 90	
Total			288 55
Mining Lands and Yukon Branch—			
Mining fees (quartz and placer)	36	$ 85 00	
Rental (coal)	231	25,162 18	
Royalty	156	18,892 34	
Petroleum and natural gas	102	13,823 39	
Domestic coal permits	30	181 05	
Potash fees and rental	16	2,090 00	
Total			60,233 96
School Lands Branch—			
General sales	19	$ 8,096 08	
Timber permits	7	42 50	
Hay payments	823	2,123 00	
Grazing rentals	854	13,116 97	
Coal rentals and fees	12	667 00	
" royalty	8	652 50	
Petroleum and natural gas payments	21	1,625 00	
Gravel dues	1	5 25	
Potash fees and rental	1	45 00	
Total			26,373 30
Grand total			$591,226 65

REPORT OF THE AGENT OF DOMINION LANDS, E. W. WIDMEYER, DAUPHIN, MANITOBA.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Homestead fees	424	$4,220 00	
Improvements	30	1,038 90	
Land sales	35	2,046 58	
Searches	596	149 00	
Applications for patent	332	.....	
" " inspection	217	.....	
Entries cancelled	217	.....	
Sundries	2	12 50	
Total			$ 7,466 98
Timber and Grazing Branch—			
Timber permits	542	$2,421 00	
" seizures	39	790 30	
Hay permits	405	1,237 00	
Grazing rentals	38	340 30	
Total			4,788 60
Forestry Branch—			
Timber permits	1,884	$15,615 91	
Permit fees and rentals	33	225 00	
Seizures	75	983 44	
Grazing rentals	59	974 55	
Hay dues	355	947 40	
Total			18,746 30
School Lands Branch—			
General sales	8	$1,621 79	
Timber permits	16	138 25	
Hay permits	260	539 35	
Grazing rentals	51	751 75	
Cultivation permits	2	53 90	
Total			3,105 04
Seed Grain Branch—			
Seed grain payments	19	$737 88	
Total			737 88
Grand total			$34,844 80

REPORT OF THE AGENT OF DOMINION LANDS, A. NORQUAY, EDMONTON, ALTA.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Soldier grants	225	.....	
Homestead fees	844	$8,420 00	
Improvements	273	9,659 99	
Land sales, cash	87	7,396 97	
Pre-emption payments	2	1,159 69	
Purchased homestead payments	8	214 34	
Searches	68	34 50	
Applications for patent recommended	1,684	.....	
" " inspection received	1,020	.....	
Entries cancelled	926	.....	
Sundries	4	32 00	
Total			$26,917 49
Timber and Grazing Branch—			
Bonus	3	$ 3,225 65	
Ground rent	33	4,564 86	
Royalty on sales	34	10,331 22	
Timber permits	1,184	9,219 19	
" seizures	122	4,110 26	
Hay permits	1,232	2,897 60	
Grazing rentals, cash	225	900 15	
Sundries	596	28,600 14	
Total			63,849 07
Forestry Branch—			
Timber dues	19	$3,942 53	
Permit fees and rental	33	10 75	
Seizures, grazing	1	13 00	
Grazing rent, etc	29	597 80	
Hay dues, etc	43	258 20	
Total			4,822 28
Mining Lands and Yukon Branch—			
Mining fees	88	$ 354 50	
Rental	149	24,827 79	
Royalty	25	12,391 77	
Assessment payments	9	900 00	
Coal permits	1	.....	
Sundries	103	9,328 39	
Total			47,802 45
School Lands Branch—			
General sales	2	$ 276 20	
Timber permits	35	807 15	
Hay permits	656	1,660 60	
Grazing rentals	325	5,425 48	
Coal rental	16	909 18	
Cultivation permits	1	15 00	
Sundries	75	2,535 89	
Total			11,629 50
Miscellaneous—			
Seed grain and provision payments	364	15,233 36	
Total			15,233 36
Grand total			$170,254 15

REPORT OF THE AGENT OF DOMINION LANDS, F. L. CHRISTIE, GRANDE PRAIRIE, ALTA.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Homestead fees	558	$5,580 00	
Improvements	61	2,284 00	
Land sales, cash	28	3,490 04	
Hay permits	24	6 00	
Applications for patent received	383	.....	
" " inspection received	169	.....	
Entries cancelled	265	.....	
Assignment fees	1	.....	
Soldier grants	96	.....	
Total			$11,360 04
Timber and Grazing Branch—			
Bonus	7	$ 9 20	
Timber permits	324	703 35	
" seizures	3	100 38	
Hay permits	331	922 40	
" excess	74	1,326 18	
Timber excess	57	207 75	
Total			3,269 26
Irrigation Branch—			
Sales	1	71 00	
Total			71 00
Mining Lands and Yukon Branch—			
Mining fees	4	$ 20 00	
Rental	6	115 00	
Petroleum and gas	4	356 95	
Royalty	4	15 00	
Transfer of lease	1	2 00	
Coal permits	3	27 50	
Total			536 45
School Lands Branch—			
Petroleum and gas	1	$ 10 00	
Hay permits	43	54 70	
Grazing rentals	78	1,184 96	
Total			1,249 66
Miscellaneous—			
Seed grain and provision repayments	80	$5,706 44	
Total			5,706 44
Grand total			$22,192 85

REPORT OF THE AGENT OF DOMINION LANDS, W. C. COWELL, KAMLOOPS, B.C.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Homesteads	31	$ 310 00	
Soldier grants	18	.....	
Improvements	36	3,516 48	
Land sales	26	3,154 88	
Ground rent	3	26 64	
Searches, etc.	123	40 97	
Applications for patent	118	.....	
" " inspection	41	.....	
Homestead entries cancelled	28	.....	
Total			$ 7,048 97
Timber and Grazing Lands Branch—			
Sale scale books	11	$ 43 50	
Bonus	1	1,948 00	
Ground rent	54	4,540 04	
Royalty	33	12,874 45	
Timber permits	307	3,248 55	
" seizures	3	31 30	
Hay permits	11	12 55	
Grazing rentals	498	8,063 74	
Improvements	1	50 00	
Registration fees	25	50 00	
Fire guarding	2	701 93	
Total			31,564 06
Forestry Branch—			
Timber dues	21	$271 00	
Permit fees	29	7 25	
Seizures	2	79 93	
Rentals	8	89 40	
Hay dues	25	27 45	
Total			475 03
Mining Lands and Yukon Branch—			
Mining fees	13	$160 00	
Rental	8	230 10	
Total			390 10
Miscellaneous—			
Seed grain collections	26	$417 13	
Total			417 13
Grand total			$39,895 29

REPORT OF THE ACTING AGENT OF DOMINION LANDS, J. A. REID, LETHBRIDGE, ALTA.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Soldier grants	90	.....	
Homestead fees	161	$ 1,610 00	
Pre-emption fees	4	40 00	
Purchased homestead fees	....	.....	
Improvements	49	2,850 18	
Land sales, cash	19	1,907 43	
Pre-emption payments	511	164,642 92	
Purchased homestead payments	79	12,510 87	
Searches, office fees, etc	124	37 55	
Applications for patent received	1,547	.....	
" " inspection received	134	.....	
Entries cancelled	190	.....	
Sundries	1	20 00	
Total			$183,618 95
Timber and Grazing Branch—			
Timber permits	25	$ 53 25	
Hay permits	104	131 85	
Grazing rentals	1,003	23,938 08	
Improvements	2	20 00	
Sundries	17	38 00	
Total			24,181 18
Forestry Branch—			
Timber dues	56	$ 736 82	
Permit fees and rental	441	816 10	
Seizures	13	176 62	
Grazing rent, etc	252	5,535 03	
Hay dues, etc	161	486 95	
Total			7,751 52
Irrigation Branch—			
Irrigation sales	12	$2,293 37	
Total			2,293 37
Mining Lands and Yukon Branch—			
Mining fees	22	$ 297 50	
Rental	42	4,062 51	
Royalty	91	4,818 43	
Petroleum and natural gas	37	4,422 65	
Registration fees	2	4 00	
Total			13,605 09
School Lands Branch—			
General sales	23	$15,960 30	
Hay permits	128	129 30	
Grazing rentals	355	6,089 66	
Mining fees	2	10 00	
Coal, petroleum and gas rental	19	1,948 50	
Coal royalty	10	84 95	
Registration fees	2	4 50	
Total			24,226 61
Miscellaneous—			
Seed grain and provision payments	1,090	$117,146 56	
Total			117,146 56
Grand total			$372,823 28

REPORT OF THE AGENT OF DOMINION LANDS, L. P. NOEL, MOOSEJAW, SASKATCHEWAN.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Homestead fees	206	$ 2,060 00	
Purchased homestead fees	2	20 00	
Improvements	37	2,984 35	
Land sales, cash	26	3,088 96	
Pre-emption payments	1,185	395,012 33	
Purchased homestead payments	132	22,114 86	
Searches	1,240	332 75	
Applications for patent received	3,060	.....	
" " inspection received	190	.....	
Entries cancelled	377	.....	
Total			$425,613 25
Timber and Grazing Branch—			
Bonus	1	$ 2 00	
Timber seizures	1	25	
Hay permits	323	965 65	
Grazing rentals, cash	399	6,670 09	
Total			7,637 99
Forestry Branch—			
Timber dues	72	$232 85	
Permit fees and rentals	28	116 25	
Seizures	10	55 25	
Grazing rent, etc	123	971 55	
Hay dues, etc	151	640 55	
Total			2,016 45
Mining Lands and Yukon Branch—			
Mining fees	44	$ 249 25	
Rental	36	2,263 10	
Royalty	75	2,992 35	
Sundries	1	10	
Total			5,504 80
School Lands Branch—			
General sales	25	$13,737 61	
Timber permits	1	75	
Hay permits	963	1,634 85	
Grazing rentals	877	9,821 37	
Coal rentals	2	105 00	
Cultivation permits	1	40 00	
Total			25,339 58
Miscellaneous—			
Seed grain and provision repayments	1,171	$194,727 76	
Sundries	....	8 02	
Total			194,735 78
Grand total			$660,847 85

REPORT OF THE AGENT OF DOMINION LANDS, W. D. MAGEE, NEW WESTMINSTER, B.C.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Homestead fees	13	$ 130 00	
Improvements	7	293 33	
Land sales	1	26 00	
Townsite payments	4	240 79	
Purchased homestead payments	36	1,025 39	
Searches, map sales, office fees, etc.	16	9 25	
Applications for patent received	19	.....	
" " inspection received	11	.....	
Entries cancelled	12	.....	
Total			$ 1,724 76
Mining Lands and Yukon Branch—			
Mining fees	312	$ 1,555 50	
Rental	356	15,260 91	
Sundries	11	22 00	
Total			16,838 41
Grand total			$18,563 17

REPORT OF THE AGENT OF DOMINION LANDS, J. E. CARSON, PEACE RIVER, ALTA.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Homestead fees	384	$3,840 00	
Improvements	38	2,244 25	
Land sales, cash	21	1,212 60	
Searches	9	2 25	
Applications for patent received	325	.....	
" " inspection received	91	.....	
Entries cancelled	140	.....	
Total			$ 7,299 10
Timber and Grazing Branch—			
Timber permits	271	$ 600 30	
" seizures	1	25 00	
Hay permits	369	1,950 80	
Grazing rentals, cash	86	582 55	
Total			3,158 65
Forestry Branch—			
Hay permits	3	$3 45	
Total			3 45
Mining Lands and Yukon Branch—			
Petroleum applications and rentals	880	$37,341 64	
Coal applications	1	5 00	
Total			37,346 64
School Lands Branch—			
Hay permits	51	$201 60	
Grazing permits	47	747 40	
Petroleum rentals and applications	43	2,171 56	
Total			3,120 56
Miscellaneous—			
Seed grain and relief payments	64	$4,185 62	
Total			4,185 62
Grand total			$55,114 02

REPORT OF THE AGENT OF DOMINION LANDS, R. M. TREEN, PRINCE ALBERT, SASK.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Homestead fees	535	$5,350 00	
Improvements	76	2,852 50	
Land sales, cash	53	3,942 57	
Pre-emption payments	3	374 93	
Purchased homestead payments	6	918 48	
Searches, map sales, office fees, etc	189	47 25	
Applications for patent received	791	.....	
" " inspection received	214	.....	
Entries cancelled	294	.....	
Total			$13,485 73
Timber and Grazing Branch—			
Ground rent	25	$ 5,580 40	
Royalty on sales	49	55,134 18	
Timber permits	811	8,432 65	
" seizures	34	2,765 21	
Hay permits	614	1,573 10	
Grazing rentals, cash	321	1,513 91	
Sundries	....	21 06	
Total			75,020 51
Forestry Branch—			
Timber dues	562	$9,437 23	
Seizures	5	402 10	
Grazing rent, etc	65	919 75	
Hay dues, etc	127	550 25	
Total			11,309 33
Mining Lands and Yukon Branch—			
Mining fees	194	$1,266 00	
Total			1,266 00
School Lands Branch—			
General sales	2	$ 40 00	
Timber permits	45	602 11	
Hay permits	334	647 65	
Grazing rentals	228	2,355 08	
Timber seizures	3	7 50	
Cultivation permits	3	28 50	
Total			3,680 84
Miscellaneous—			
Seed grain and provision repayments	133	$5,912 44	
Total			5,912 44
Grand total			$110,674 85

REPORT OF THE AGENT OF DOMINION LANDS, T. J. WADMAN, REVELSTOKE, B.C.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Homestead fees	10	$ 100 00	
Improvements	21	1,000 15	
Land sales	5	232 75	
Townsite payments	10	155 68	
Purchased homestead payments	3	101 99	
Searches, map sales, etc	33	8 10	
Applications for patent	14	.....	
" " inspection	5	.....	
Entries cancelled	13	.....	
Total			$ 1,598 67
Timber and Grazing Branch—			
Ground rentals	74	$ 2,856 13	
Royalties	29	12,622 14	
Timber permits	89	426 69	
" seizures	1	10 50	
Fireguarding charges	5	1,326 21	
Sundries	6	14 25	
Total			17,255 92
Mining Lands and Yukon Branch—			
Rental	1	$41 29	
Total			41 29
Grand total			$18,895 88

REPORT OF THE ACTING AGENT OF DOMINION LANDS, L. C. PATTERSON, SASKATOON, SASK.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Homestead fees	123	$ 1,230 00	
Pre-emption fees	1	10 00	
Improvements	35	2,222 05	
Land sales, cash	68	9,806 89	
Douk. Time sales	110	30,746 05	
Pre-emption payments	338	114,311 64	
Purchased homestead payments	189	32,745 49	
Searches, etc	568	142 00	
Applications for patent	1,468	.....	
" " inspection	92	.....	
Entries cancelled	140	.....	
Sundries, seed grain statements	29	912 00	
Total			$192,126 12
Timber and Grazing Branch—			
Timber permits	97	$ 137 30	
" seizures	4	75 00	
Hay permits	460	1,137 92	
Grazing rentals	39	398 66	
Sundries	1	3 25	
Total			1,752 13
Forestry Branch—			
Timber dues, excess	193	$353 97	
Permit fees and rentals	154	601 06	
Seizures	11	145 50	
Grazing rent, etc	85	903 75	
Hay dues, etc	156	748 75	
Total			2,753 03
Mining Lands and Yukon Branch—			
Mining fees	160	$1,659 65	
Sundries, quarrying leases	11	197 00	
Total			1,856 65
School Lands Branch—			
General sales	14	$18,569 36	
Timber permits	4	11 50	
Hay permits, excess	693	1,925 52	
Grazing rentals	1,346	5,048 05	
Mining fees	2	40 00	
Cultivation permits	1	12 50	
Registration fees (sundries)	3	16 50	
Total			25,623 43
Miscellaneous—			
Seed grain and provisions	1,386	$167,406 01	
Sundries, seed grain	1	230 80	
Total			167,636 81
Grand total			$391,748 17

REPORT OF THE AGENT OF DOMINION LANDS, S. LEE, SWIFT CURRENT, SASK.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Homestead fees	187	$ 1,850 00	
Pre-emption fees	6	50 00	
Improvements	52	3,530 50	
Land sales, cash	15	2,258 92	
Land entries	2	20 00	
Pre-emption payments	1,282	445,091 47	
Purchased homestead payments	135	21,767 55	
Searches, map sales, office fees	2,856	714 00	
Applications for patent received	5,798	.....	
" " inspection received	291	.....	
Entries cancelled	287	.....	
Soldier grant entries	63	.....	
Total			$475,282 44
Timber and Grazing Branch—			
Timber permits	152	$ 92 25	
Hay permits	489	780 55	
Grazing rentals, cash	1,302	19,613 96	
" " excess timber	1	1 00	
" " excess hay	2	1 20	
Total			20,488 96
Forestry Branch—			
Permit fees and rental	293	$ 542 88	
Hay seizures	1	3 00	
Timber seizures	5	11 60	
Grazing rent	202	5,114 60	
Hay dues	128	348 40	
Total			6,020 48
Irrigation Branch—			
Sales	11	$1,809 76	
Total			1,809 76
Mining Lands and Yukon Branch—			
Mining fees and potassium leases	48	$ 340 00	
Rental	7	110 84	
Royalty	13	188 37	
Quarrying	3	55 00	
Assignments, etc	29	58 00	
Coal permits	4	.....	
Petroleum and natural gas	32	3,824 25	
Total			4,576 46
School Lands Branch—			
General sales	1	$ 185 60	
Hay permits	496	767 40	
Grazing rentals	595	8,796 24	
Mining fees	2	80 00	
Hay seizures	1	2 00	
Excess hay	8	10 20	
Total			9,841 44
Miscellaneous—			
Seed grain relief	1,362	$220,814 20	
Total			220,814 20
Grand total			$738,833 74

REPORT OF THE AGENT OF DOMINION LANDS, L. RANKIN, WINNIPEG, MAN.

Statement of business transacted during the fiscal year ending March 31, 1919:—

	Number.	Revenue.	Total.
Land Patents Branch—			
Homestead entries	389	$ 3,890 00	
Improvements	138	6,087 19	
Land sales, cash	65	5,975 25	
Searches, maps, etc	710	399 75	
Seed grain	402	12,062 86	
Sundries	2	123 64	
Total			$28,538 69
Timber and Grazing Lands Branch—			
Hay rental	1	$ 9 95	
Grazing rental	95	710 17	
Total			720 12
Mines Branch—			
Mining fees	1,401	$6,222 00	
Quarries	19	511 81	
Rentals	22	510 93	
Petroleum gas	3	350 00	
Total			7,594 74
School Lands Branch—			
Sales	31	$9,362 64	
Grazing rentals	175	2,307 80	
Coal permits	2	10 00	
Total			11,680 44
Grand total			$48,533 99

REPORT OF THE MINING LANDS AND YUKON BRANCH.

H. H. ROWATT.

The total revenue of this branch, derived from all sources during the fiscal year, amounts to $625,547.88. Owing to conditions resulting from the war it has been found necessary to grant, in a number of cases, extensions of time within which to pay the rental of mining locations acquired under lease.

The statements lettered "A" and "B," showing in different forms how the revenue is made up, will be found at the end of this report. The statement lettered "A" shows the total revenue, and the statement lettered "B" shows the revenue collected at each agency, including the Yukon Territory.

The revenue for the Yukon Territory for the year amounts to $112,493.85.

The reports and statements for the fiscal year from the Gold Commissioner and the Crown Timber and Land Agent at Dawson in the Yukon Territory, also the report of the Inspecting Engineer, are herewith submitted.

TIMBER IN THE YUKON TERRITORY.

The total amount of dues collected on account of timber in the Yukon Territory during the fiscal year was $7,936.23. During the year 81 permits were issued, under the authority of which 2,785 feet b.m. of timber and 8,972½ cords of wood were cut. The dues collected on permits issued amounted to $5,072.28.

There are in existence 88 timber berths held under license to cut timber within the Territory, covering an area of 182.93 square miles, which licenses were granted prior to the 10th May, 1906, on which date the regulations governing the granting of licenses to cut such timber in the Territory were rescinded, and regulations for the issue of permits to cut timber substituted therefor.

According to returns received in the department, the number of feet b.m. of lumber manufactured under license during the year and sold was 125,000 and the number of cords of wood cut 3,038½. Seizure dues, amounting to $1,616.45, were collected on 795½ cords of wood and 265,239 feet of lumber cut in trespass. This does not include the very large amount of timber and cordwood cut free of dues for mining purposes.

MINING LANDS OTHER THAN COAL.

During the fiscal year 1,114 entries for quartz mining claims were granted by the mining recorders in Manitoba, Saskatchewan and Alberta, and by the mining recorder for unorganized districts.

According to the returns received from the Yukon Territory during the fiscal year, 317 entries for placer mining claims, 101 entries for quartz mining claims, and 2,317 renewals and relocations were recorded. The revenue collected from these sources and from fees for registering documents in connection with mining proprties was $54,674.90.

ROYALTY AND GOLD MINED IN THE YUKON TERRITORY.

The total amount collected up to the 31st of March, 1919, for royalty on gold, the output of placer mining claims in the Yukon Territory, after deducting the exemption at one time allowed under the regulations, was $4,713,297.71 of which amount $48,677.07 was collected during the last fiscal year. For the purpose of estimating this royalty the gold is valued at $15 an ounce, which is much below its real value.

The actual value of gold produced from placer mining operations in the Yukon Territory, up to the 31st of March last, might be safely placed at $154,910,300.

The statement lettered "C," at the end of this report shows the total gold production, the total production subject to royalty, and the total royalty collected for each fiscal year from the 1st May, 1898, to the 31st March, 1919.

DREDGING.

Twenty-five leases to dredge for minerals in the beds of rivers in the Yukon Territory are now in force, covering a total frontage of 147·76 miles. The total revenue derived from this source up to the 31st of March, 1919, amounts to $199,956.08, of which amount $1,695.10 was collected during the fiscal year just closed.

These dredging leases are confined to the Yukon, Fortymile, and Klondike rivers.

There are in operation in the Yukon Territory 8 dredges. Most of these dredges are working on the Klondike river and tributaries, and are operated by hydro-electric motive power. Two of the largest gold-saving dredges in the world are being operated most successfully on the Klondike river-flat.

Eight leases to dredge for minerals in the submerged beds of rivers in the provinces of Alberta and Saskatchewan are now in force, covering a total frontage of 38·19 miles. Of these leases 7 are in the province of Alberta and include 31 miles, and one is in the province of Saskatchewan and includes 7·19 miles. The total revenue derived from this source up to the 31st March, 1919, amounts to $46,636.35, of which amount $110 was collected during the past fiscal year.

HYDRAULIC MINING.

The hydraulic mining regulations relating to the Yukon Territory were rescinded by an Order in Council dated the 2nd of February, 1904, but leases already granted were not affected by such withdrawal.

There are still in force in the Yukon Territory 7 hydraulic mining leases, covering an area of 15·27 square miles. Since the Hydraulic Mining Regulations were first established in December, 1898, 47 hydraulic mining leases have been issued, all of which have now been cancelled, with the exception of the above number.

HOMESTEADS IN THE YUKON TERRITORY.

Ninety-seven homestead entries in the Yukon Territory have been granted, of which 62 are now in force, comprising a total area of 9,610·56 acres. Patents have been issued for 14 homesteads.

PETROLEUM AND NATURAL GAS.

There are now in force under the regulations 3,172 petroleum and natural gas leases, embracing a total area of 1,109,934 acres, distributed as follows: In Manitoba 4 leases, comprising 1,053 acres; in Saskatchewan 91 leases, comprising 41,888 acres; in Alberta 2,816 leases, comprising 973,621 acres; in British Columbia 253 leases, comprising 84,412 acres; and in the Northwest Territories 8 leases, comprising 8,960 acres. The total revenue derived from petroleum lands during the year amounts to $106,116.66.

Natural gas has been discovered and is now being utilized for commercial and domestic purposes in different parts of the province of Alberta. Oil has been discovered, but not in large quantities. Boring operations are being carried on throughout Alberta and Saskatchewan with a view to further discoveries.

QUARRYING.

The number of leases now in force, issued under the provisions of the regulations, is 282, distributed as follows: In Manitoba 82 leases, comprising 2,439 acres; in Saskatchean 46 leases, comprising 1,452 acres; in Alberta 87 leases, comprising 3,662 acres; and in British Columbia 67 leases, comprising 2,101 acres.

The total revenue collected during the fiscal year on account of quarrying leases, including the application fees, amounts to $8,052.84.

WATER-RIGHTS.

There are now in force in the Yukon Territory 475 grants to divert water for mining purposes, aggregating a total of 117,471 miner's inches. During the last fiscal year 7 water-rights were issued, comprising 1,900 miner's inches.

Grants are issued by this department authorizing the diversion of water in the Yukon Territory for power purposes. Up to date 13 grants have been issued, authorizing the diversion of 131,200 miner's inches of water, 4 of these grants have been permitted to lapse, but the remaining 9 authorizing the diversion of 66,200 miner's inches of water, are in good standing. Two power plants have been installed, one of which is situated on the north fork of the Klondike river, and it appears that this plant is kept in operation during the winter, and the power generated is being used for heating and lighting purposes in the city of Dawson.

COAL MINING LANDS.

The regulations authorizing the sale of coal mining lands have been rescinded and all sales made previous to the withdrawal of the regulations have been completed. The total amount of revenue received on this account was $2,097,228.90.

COAL LEASES.

The total number of coal mining leases in force at the close of the fiscal year was 558 including a total of 251,028 acres, distributed as follows: In the province of Alberta 477 leases, comprising 241,368 acres, in Saskatchewan 79 leases, comprising 7,460 acres; in British Columbia 1 lease, comprising 2,160 acres and in the Yukon Territory 1 lease, comprising 40 acres.

The total number of leases of coal mining rights issued during the year was 121 comprising 52,612 acres. The total revenue received during the year for rental of coal mining rights was $194,000.38.

ROYALTY ON COAL.

Under the regulations governing the issue of leases to mine coal the royalty is fixed at five cents per ton of 2,000 pounds on the merchantable output of the mine.

The following is a statement showing the amount collected on account of royalty on coal mined from lands in the Western Provinces, the North West Territories, and the Yukon Territory, respectively, during each year since the regulations came into effect:—

Year.	Alberta.	Saskatchewan.	British Columbia.	Yukon.	N. W. T.
	$ c.	$ c.	$ c.	$ c.	$ c.
1903-4	56 90	Nil	Nil	2 40	Nil
1904-5	2,822 00	110 70	"	47 00	"
1905-6	2,379 75	47 10	"	569 33	"
1906-7	3,865 26	74 20	"	517 34	"
1907-8	7,621 67	4 30	"	1,543 38	"
1908-9	5,322 39	358 11	"	371 73	"
1909-10	153,559 98	1,672 50	3 00	136 38	"
1910-11	218,932 88	2,184 74	3 50	125 00	"
1911-12	104,894 55	2,034 74	2 78	390 00	"
1912-13	142,997 79	3,145 72	6 95	1,069 11	"
1913-14	147,198 75	2,123 43	19 35	Nil	"
1914-15	104,489 77	1,880 06	4 90	"	"
1915-16	67,190 17	2,601 52	3 50	"	5 10
1916-17	149,447 82	2,228 08	8 92	"	Nil
1917-18	144,634 75	4,046 55	Nil	"	6 00
1918-19	175,687 66	3,193 05	Nil	"	Nil

By an Order in Council dated the 16th of March, 1918, provision was made that, owing to the scarcity of fuel in the Yukon Territory, no royalty shall be levied or collected on coal mined in that Territory for a period of five years, that is, up to the 7th of April, 1923.

The total amount derived from coal mining lands on account of purchase price, rental royalty and application fees, during the fiscal year, amounted to $375,437.94.

During the past year gold to the value of $139,638 was extracted from ores taken from mineral claims in Northern Manitoba, and over two million pounds of copper obtained from ore mined in the same district.

There were thirteen members of the staff of this Branch on active service.

SESSIONAL PAPER No. 25

REVENUE OF DOMINION LANDS INCLUDING THE YUKON TERRITORY.

A.—STATEMENT of receipts on account of coal and minerals in the Provinces and Territories, also Timber, Hay, Coal, Hydraulic Mining, Dredging, Royalty on Gold, Mining Fees, Rental of Agricultural Lands, Water-Power and Water Fronts and sale of Dominion Lands in the Yukon Territory. For the fiscal year ended 31st March, 1919:—

Quartz acreage sales	$ 253 68	Free certificates, export of gold	$ 10 50
Dominion lands sales	339 78	Stone quarry	8,052 84
Coal mining	2,556 85	Registration fees	61 50
Coal royalty	178,880 71	Homestead fees	30 00
Coal rental	194,000 38	Hay, Yukon	30 55
Rental, Yukon	11,608 07	Interim receipt account	1,192 75
Timber dues, Yukon	7,936 23	Tar sands	1,021 94
Mining fees	54,674 90	Sand, stone and gravel	2 50
Hydraulic leases	4,393 72	Petroleum	106,116 66
Dredging leases, N.W.T.	110 00	Potash	3,902 15
Dredging leases, Yukon	1,695 10		
Gold export tax	48,677 07	Total	$625,547 88

B.—STATEMENT showing the total amount of revenue collected at each agency, including the Yukon Territory, for the fiscal year ended 31st March, 1919.

Battleford	$ 146 36	Duncan, Mining Recorder's Office	353 18
Calgary	172,864 73	Sixtymile, Min. Recorder's Office.	50 00
Edmonton	128,273 26	Dawson, Crown Timber Office.	6,421 13
Grade Prairie	190 15	Dawson, Royalty Collector's Office	48,464 63
Kamloops	695 84	Dawson, Comptroller's Office	8 50
Lethbridge	115,557 98	Dawson Dom. Lands Office	9,066 60
Moosejaw	8,009 27	Dawson, Min. Recorder's Office	210 00
New Westminster	17,227 63	Whitehorse, Min. Rec. Office	795 50
The Pas	4,957 55	Whitehorse Crown Tim. Office	1,545 65
Peace River	45,565 33	Whitehorse Royalty Collector's Office	212 44
Prince Albert	2,181 00	Whitehorse Agent to Comptroller	2 00
Revelstoke	84 64	Whitehorse Dom. Lands Office	2,963 75
Saskatoon	2,374 66		
Swift Current	6,138 75	Total	$625,547 88
Unorganized	114 00		
Winnipeg	8,672 88		
Dawson, Gold Comm'r Office	42,400 47		

C.—STATEMENT showing the total Gold Production, the total subject to Royalty and the total Royalty collected for each fiscal year from May 1, 1897, to March 31, 1919.

Fiscal Year.	Gold Production.	Subject to Royalty.	Royalty Collected.	Total Revenue.
	$ cts.	$ cts.	$ cts.	$ cts.
1897-1898	3,072,773 20	2,732,928 20	273,292 82	273,292 82
1898-1899	7,582,283 02	5,882,626 00	588,262 37	589,943 52
1899-1900	9,809,464 64	7,307,720 00	730,771 99	733,041 04
1900-1901	9,162,082 79	7,234,416 17	592,660 98	596,368 03
1901-1902	9,566,340 52	8,367,225 88	331,436 79	331,532 04
1902-1903	12,113,015 34	12,113,015 34	302,893 48	302,893 48
1903-1904	10,790,663 12	10,790,663 12	272,217 96	272,217 96
1904-1905	8,222,053 91	8,222,053 91	206,760 87	206,760 87
1905-1906	6,540,007 09	6,540,007 09	163,963 25	163,963 25
1906-1907	3,304,791 05	3,304,791 05	82,622 42	82,622 42
1907-1908	2,820,161 60	2,820,161 60	70,504 65	70,504 65
1908-1909	3,260,282 80	3,260,282 80	81,507 07	81,507 07
1909-1910	3,594,251 20	3,594,251 20	89,844 10	89,844 10
1910-1911	4,126,727 60	4,126,727 60	103,168 19	103,168 19
1911-1912	4,024,236 75	4,024,236 75	100,606 29	100,606 29
1912-1913	5,018,411 85	5,018,411 85	125,460 52	125,460 52
1913-1914	5,301,507 60	5,301,507 60	132,537 69	132,537 69
1914-1915	4,649,634 40	4,649,634 40	116,241 04	116,241 04
1915-1916	4,458,278 00	4,458,278 00	111,457 19	111,457 19
1916-1917	3,960,206 99	3,960,206 99	99,007 92	99,007 92
1917-1918	3,266,018 85	3,266,018 85	81,650 55	81,650 55
1918-1919	1,947,082 20	1,947,082 20	48,677 07	48,677 07
Total	126,590,274 52	118,922,246 60	4,705,545 21	4,713,297 71

GOLD COMMISSIONER'S REPORT.—G. P. MacKENZIE.

There has been a decrease of revenue compared with the previous year, the chief decrease being on account of renewal fees. This loss of revenue is directly the result of the war conditions, a large number of claims being held free from cancellation, without the necessity of renewal, owing to the fact that their owners are on Military Service.

GOLD PLACER MINING.

129,805·48 ozs. of gold were mined during the year and royalty amounting to $48,677·07 paid.

The production was greatly affected by war conditions. Each successive year since 1914 has seen a tremendous increase in the price of all kinds of provisions and particularly in dredge machinery and repair parts, and as there has been no increase in the value of the gold mined, it is nothing short of remarkable that the industry has been able to stand the strain and that the production is not entirely ceased. Large areas of known pay gravels are not being worked at the present time, owing to the almost prohibitive cost of installing the necessary machinery.

YUKON GOLD COMPANY.

Dredging Operations.—The Yukon Gold Company operated five dredges continuously for a period of 139 days from May 25 to October 11.

These dredges are electrically driven and are operated by power furnished by the company's hydro-electric plant on the Twelve-Mile river. A total of 2,767,000 cubic yards of material was dredged.

Hydraulic Operations: Hydraulic operations were carried on at eight different points on the company's property as follows: Adams Hill, Bunker Hill, Monte Cristo Gulch, American Gulch, Cheechace Hill, Oro Fino Gulch, Fox Gulch, Trail Gulch. A total of 2,054,000 cubic yards of material was washed.

CANADIAN KLONDIKE MINING COMPANY, LIMITED.

Dredging Operations: The Canadian Klondyke Mining Company, Limited, operated three dredges:—

Canadian No. 1 operated 123 days from June 4 to October 5 and during that period dredged 553,500 cubic yards of gravels.

Canadian No. 2 operated 195 days from May 9 to November 20 and during that period dredged 1,919,670 cubic yards of material.

Canadian No. 4 operated 338 days from May 1, 1918, to April 3, 1919, and dredged 300,000,000 cubic yards of gravels.

It is worthy of note that Canadian No. 4 made a record for continuous operations in the Yukon and that it operated successfully throughout the entire winter and was only closed down on April 3 to enable the necessary repairs to be made.

These dredges are all electrically driven, power being furnished by the Canadian Klondyke Power Company's hydro-electric plant at the North Fork of the Klondyke river. This plant was in operation continuously throughout the entire year and is capable of developing all the power required in the district.

Hydraulic Operations: The company operated their pumping plant at the mouth of Hunker creek, where the water is pumped from the Klondyke river to a ditch on the Left limit of Hunker creek and from thence conveyed to property owned by the company at Last Chance creek, and is also sold to individual operators. The water is pumped by means of power furnished by the North Fork plant. It is worthy of note that the Canadian Klondyke Power Company was able to again successfully operate their hydro-electric plant throughout the entire winter. The water to furnish the power is conveyed through six miles of ditch or canal. The practice is to fill the ditch when the ice is forming in the fall and when frozen over to drop the water a few inches, the ice then acts as a protection and prevents the water from freezing in the ditch.

In addition to the operations referred to this company operates a large machine shop for the necessary repairs of the equipment.

NORTH WEST CORPORATION, LIMITED.

This company has not yet installed machinery on their large holdings, but continue their ground sluicing operations, removing the overburden from the gravels preparatory to actual mining operations. 284,242 cubic yards of material was removed by ground sluicing on placer claims between Nos. 236 and 276 below Lower Discovery Dominion and 165,200 cubic yards from placer claims on Lower Quartz creek.

In addition to this ground sluicing, 53 prospecting shafts, averaging a depth of forty feet were sunk on claims on Lower Dominion and 35 shafts, averaging 20 feet in depth on Lower Quartz. It is confidently hoped that as soon as conditions approach normal, this company will equip their holdings with requisite machinery.

OTHER PLACER OPERATIONS.

Hydraulic operations by eight operators were carried on on Hunker creek and tributaries, Last Chance creek, Hunker hills immediately below Independence creek, Temperance hill, Paradise hill and on Whiskey hill.

A number of open cut operations were carried on on Upper Hunker and Gold Bottom creeks during the summer months and drifting operations during the winter months.

There were ten outfits on the Ten Mile, fifteen on Kirkman, five on Thistle, six on Black Hills and eight on Scroggie creek. Henderson and Nansen creeks were also mined on a small scale. On Sulphur creek ten individual outfits were operating. Quartz creek was the busiest creek in the district and continues to be a steady producer.

On Dominion creek the only individual operations were on the upper end of the creek. In the Upper Stewart country, Highet continues to be the banner creek.

LODE MINING.

Of the large number of mineral claims in good standing, many of them crown granted, on only a few has development work of any consequence been attempted during the year.

Extensive development work has been carried on on the Big Horn creek, a tributary of the Upper McQuestion river in silver-lead. A number of other silver-lead properties in the same mineral belt are now being prospected and the outlook for this class of mining is most encouraging. A group of silver-lead properties on the Little Twelve Mile have been opened up during the past year and high grade galena ore discovered. The outlook is most hopeful with regard to these properties.

On William creek development work on copper properties is reported as encouraging. In a general way the outlook for rock mining in the northern end of the Territory was never more promising.

SCHEELITE.

Reference was made in my report of last year to deposits of scheelite on Dublin gulch. Further investigation has shown that placer scheelite can be profitably saved in connection with placer gold mining operations on that stream.

REPORT OF CROWN TIMBER AND LAND AGENT, DAWSON, YUKON TERRITORY.—G. P. MacKENZIE.

There has been a net decrease in revenue compared with the previous year of $539.34 in the Land Branch and $5,183.13 in the Timber Branch.

The considerable decrease in revenue in the Timber Branch is accounted for by the fact that less wood was used for domestic purposes in Dawson and on the river steamers plying the Upper Yukon.

WOOD AND TIMBER.

Seventy-seven permits were issued during the year under authority of which 6,855½ cords of wood were cut. Seizure dues were paid on 265,239 feet b.m. logs and on 795½ cords of wood. 1,903 cords of wood and 10,000 feet b.m. logs were cut under license. As in former years large quantities of wood were used for mining purposes for which no dues are collectable.

The demand for manufactured lumber during the year was very light and as a consequence not much new lumber was manufactured, but the Yukon Saw Mill Company, Dawson, operated their mill during part of the season and have in their yards a well assorted stock of native and imported lumber.

The ordinance for prevention of fires was rigidly enforced and I am pleased to report that no forest fires of any magnitude occurred during the year.

COAL.

The Five Fingers Coal Company operated their mine at Tantalus and shipped to Dawson sufficient coal to meet all requirements.

REPORT OF INSPECTING ENGINEER M. L. & Y. BRANCH—O. S. FINNIE.

During the summer of 1918, considerable anxiety was felt over a possible shortage of coal throughout the Dominion. The quantity allowed to come in through the United States was limited, and, because Alberta had large coal deposits of her own, Eastern coal was not placed on the market west of Winnipeg. This, together with the further reason that the Fuel Controller had strongly advised the people of Canada to obtain their coal supply in advance, had the effect of speeding up the output of the Western mines. The result was that more coal was mined in the provinces of Saskatchewan and Alberta during the summer and fall of 1918 than during the same interval in any previous year, and, for the first time on record, the output from Alberta for 1918 exceeded that from Nova Scotia.

The schedule hereunder gives the output subject to royalty, the output not subject to royalty and the total output for the calendar year, 1918:—

Province.	Output Subject to Royalty year ending December 31, 1918.		Output not Subject to Royalty.	Total Output For 1918.
	From Dominion Lands.	From School Lands.		
Saskatchewan	60299	6043	281280	347622
Alberta	2984882	383465	2702262	6070609
	3045181	389508	2983542	6418231

The Federal Government does not exact a royalty on unmerchantable slack, or coal consumed under boilers at mines, or coal taken from road allowances. Neither is it exacted on mines located on Hudson's Bay Lands, or lands given as subsidies to railways, or lands disposed of prior to the introduction of royalty. Because of these exemptions, it will be observed that the quantity on which royalty is not paid is almost as great as that on which it is.

The schedule hereunder shows the total number of coal mines operating in the two provinces named, also the number which are subject to royalty and those which are not:—

Province.	Number of operating coal mines.			
	Subject to Royalty.		Not Subject to Royalty.	Total.
	On Dominion Lands.	On School Lands.		
Saskatchewan	52	10	5	67
Alberta	192	19	49	260
	244	29	54	327

Practically all coal mines subject to royalty were inspected during the past year. Those requiring it, were inspected twice.

A number of cases were found where mines were opened and operated outside the area held under lease, also cases of encroachment, and another case, in Saskatchewan, where an operator had run an entry for 160 feet almost immediately under and parallel to the main line of a railway. Such cases indicate the necessity of careful and systematic inspection and survey.

In November, 1918, one of the mine inspectors, was transferred permanently to Calgary. It was thought he would be of greater assistance to the Department by having

headquarters at Calgary, in the centre of the mining district, than by making periodical trips from Ottawa to the West.

The oil and gas districts were also inspected. They include the following fields: (1) Medicine Hat, (2) Bow Island, (3) Okotoks, (4) Viking, (5) Peace River, (6) Pelican.

(1) In the Medicine Hat field, 30 wells have been sunk, and at Redcliff 6 wells. The gas is used to a great extent for industrial purposes. The pressure, which was formerly about 500 pounds per square inch, has fallen off considerably in the past few years. One well in the district got beyond control. It was sunk by the Canada Cement Company and because of a broken casing considerable difficulty was experienced in controlling the flow of gas. Every effort is being made to correct this defect.

(2) In the Bow Island field 28 wells have been sunk. The company operating this field is known as The Canadian Western Natural Gas, Light, Heat and Power Company. It supplies gas for domestic and industrial purposes to the towns of Lethbridge, McLeod, Calgary, and other places along the route. The capacity of the Bow Island-Calgary pipe line is 39 million cubic feet daily. All the wells in this field are under control and no gas is escaping.

(3) In the Okotoks field, there is not only a large supply of gas, but, in additiou, five wells are producing oil. The total amount of gasoline shipped from Okotoks station, up to the 30th July, 1918, was 634,756 gallons. There are also three distilling plants in the field, as well as a gasoline absorption plant. This gas contains about one-half gallon gasoline per one thousand feet of gas. Many thousands of gallons gasoline will be recovered by this plant.

(4) In the Viking district, the main operator is The Northern Alberta Natural Gas Development Company, Limited. This company has nine wells, situated 3 to 9 miles north of the town of Viking. These wells have a capacity of 1,700,000 feet to 5,000,000 feet per day. It is hoped that this field will furnish sufficient gas to supply the city of Edmonton.

(5) In the Peace River district, 9 wells have been sunk. Those wells reaching a depth of 860 feet have struck the heavy black oil. This oil does not flow freely, but requires to be pumped. The capacity of these wells has yet to be determined. A large flow of water was encountered under the oil horizon at a depth of about 1,130 feet. The Peace River Oil Company have not yet been able to control the flow of this water in Wells Nos. 1 and 2. They will make a further attempt during the summer of 1919, and have undertaken to stop the flow of gas now escaping and to shut off this water which may be gaining access to the oil-bearing formation.

(6) A special trip was made to investigate the old Pelican well on the Athabaska river, which has been blowing off since the well was sunk in 1897. A survey was made to determine its location, and measurements made to ascertain the amount of gas escaping. It was found that 850,000 feet were escaping daily. Arrangements have since been made to correct this unnecessary waste. A number of other wells were sunk in this district by the Pelican Oil and Gas Company. Little oil was found but all the holes showed a large pressure of gas. All these wells are securely shut off. In the time to come the gas of this field will be found very useful for industrial and domestic purposes. The distance is not too great to expect it to be piped as far south as the city of Edmonton.

In order that the Department may be kept well informed on the oil and gas operations of the West, and that the wells are sunk with a view to conservation, and the petroleum regulations strictly observed, the Department has decided to appoint a Petroleum Engineer, whose duty it will be to investigate and supervise such matters.

The following is a synopsis of the work carried on by this Division during the past year: Number of inspections and reports, about 300; plans received and examined, 205; new surveys, 13; extensions of former surveys, 21; plans compiled, 31; declarations taken, about 50; computations of coal output from surveys, 175; reports on oil and gas, 20.

REPORT OF THE CONTROLLER, TIMBER AND GRAZING LANDS BRANCH. B. L. YORK.

The total revenue derived from timber, grazing and hay lands during the fiscal year amounts to $516,938.53.

TIMBER.

At the conclusion of this report will be found statements "A," "B" and "C," showing the total revenue: the revenue from timber by agencies and other sources of revenue by Agencies.

Statements from the Crown Timber Agents at Calgary, Edmonton, Prince Albert, Winnipeg, Kamloops, New Westminster and Revelstoke, showing the revenue collected on Dominion Lands within their respective agencies, and other information are appended hereto.

The report of the Inspector of Crown Timber Agencies, and the reports of the Inspectors of Ranches located at Calgary, Moosejaw, Prince Albert, are also attached.

The revenue derived from timber and grazing lands, received at the Crown Timber agencies, also the number of mills operated on berths held under license and the number of portable sawmills in operation, may be summarized as follows:—

Agency.	Total Revenue	No. of mills operating under licence.	No. of mills operating under permit.
	$ cts.		
Calgary	31,704 41	15	15
Edmonton	64,679 76	28	79
Prince Albert	75,933 01	15	32
Winnipeg	62,835 34	23	38
Kamloops	32,251 88	6	
New Westminster	96,724 56	26	
Revelstoke	17,263 42	3	

The returns of operations received from the timber agencies show the quantity of timber manufactured and sold, under license, to be as follows:—

—	Manufactured.	Sold.
Sawn lumber, feet b.m.	291,621,515	267,540,214
Railway ties	214,547	147,184
Laths	31,759,100	25,355,420
Shingle bolts	35,051	28,559
Shingles		22,000
Fence posts	767,508	
Telegraph poles	1,456	
Piling, lineal feet	52,088	26,153
Cribbing, lineal feet	20,341	
Cordwood	2,299	3,420

The following shows the material manufactured on permit and portable sawmill berths and the quantity sold.

—	Manufactured.	Sold.
Lumber, feet b. m	21,313,411	31,958,666
Railway ties	61,063	77,663
Fence posts	150,181	140,006
Laths	112,750	112,750
Telegraph poles	620	620
Shingle bolts	106	106
Cordwood	6,131	8,209
Mining props, feet b. m	2,323,637	1,637,416
Mining timber, lineal feet	45,000	69,030

The quantity of lumber manufactured and sold within each agency will be found in the Agent's report appended hereto.

The area of timber lands held under license and permit in the provinces of Manitoba, Saskatchewan, Alberta and British Columbia is as follows:—

—	Under license. Square miles.	Under permit, Square miles.
Manitoba	1088·08	476·03
Saskatchewan	1835·53	111·60
Alberta	1956·46	84·43
British Columbia	1776·36	4·43
	6656·43	676·49

During the year ninety-six berths were granted of which five were license berths, fifty-three cordwood berths, thirty-two portable sawmills and six permit berths.

GRAZING.

There were in force on March 31, 1919, 5,346 grazing leases, covering an area of 6,168,295 acres as follows:—

	Acres.
Manitoba	83,033
Saskatchewan	2,324,654
Alberta	2,850,002
British Columbia	410,606

This is an increase of 422,117 acres over the previous year. During the year there were 886 new leases issued.

STATEMENT "A."—Statement of Revenue for Fiscal Year 1918-1919.

Timber	$345,205 53
Grazing	124,409 77
Hay	17,347 49
Registration	190 00
Firetax	23,844 73
Improvements	610 00
Scaling fees	5,285 26
Scaling books	45 75
Total	$516,938 53

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STATEMENT "B."—Statement of Revenue from Timber for Fiscal Year 1918-1919.

Bonus under license	$ 17,916 45
Rental under license	45,185 74
Royalty under license	152,902 37
Permit fees, dues and rental	112,360 82
Seizures	16,840 15
Scaling fees	5,285 26
Scaling books	45 75
Total	$350,536 54

STATEMENT "C."—Statement of Revenue from Grazing, Hay, Registration Fees, Fire-guarding Dues, and Improvements for Fiscal Year 1918-1919.

Grazing	$124,409 77
Hay	17,347 49
Registration fees	190 00
Firetax	2,784 24
Firetax collected at Head Office	21,060 49
Improvements	610 00
Total	$166,401 99

CHIEF INSPECTOR OF DOMINION CROWN TIMBER OFFICES, E. F. STEPHENSON.

STATEMENT "A"—Summary of work performed and revenue collected at the respective Crown Timber Offices, during the year ended March 31, 1919.

Agency.	Timber and Grazing.								Forestry.				Schools Lands.					Revenue.
	Bonus	Ground Rent.	Royalty on Sales.	Timber Permits issued.	Timber Seizures.	Hay Permits.	Grazing Rentals.	Sundries.	Permit dues and rentals.	Seizures.	Grazing Rentals.	Hay Permits.	Timber Permits issued.	Seizures.	Hay Permits.	Grazing Permits.	Sundries.	$ cts.
Battleford	..	....	...	199	....	467	412	43	290	1	110	41	2	..	528	277	16	10,622 69
Calgary	..	26	27	210	5	290	493	14	179	8	124	40	7	1	823	854	1	53,274 55
Dauphin	..	....	...	542	39	405	38	....	1917	75	59	355	16	..	260	51	2	25,018 15
Edmonton	3	33	34	1184	122	1232	225	596	52	1	29	43	35	..	656	325	75	79,115 47
Grande Prairie	..	....	...	324	3	323	74	64	....	....	....	....	....	..	43	78	...	4,508 92
Kamloops	1	54	33	307	3	11	498	69	51	2	8	25	....	..	....	....	...	32,039 09
Lethbridge	..	..	....	25	....	104	1003	19	441	13	252	161	....	..	128	355	2	38,155 56
Moosejaw	..	....	...	....	1	323	599	...	100	10	123	151	1	..	963	877	.	21,111 41
New Westminster	13	189	239	45	8	....	2	321	....	....	....	....	1	.	....	....	...	94,686 77
Peace River	..	....	..	271	1	369	86	..	....	....	....	3	....	..	51	47	3	4,131 48
Prince Albert	..	25	49	811	34	614	321	....	562	5	65	127	45	3	334	228	3	89,970 68
Revelstoke	..	74	29	89	1	....	....	11	....	....	....	....	....	..	....	....	...	17,255 92
Saskatoon	..	...	..	97	8	460	139	1	341	11	85	156	4	..	690	1346	7	11,519 23
Swift Current	..	...	...	152	....	489	1302	3	293	..	202	128	....	..	496	595	11	35,765 28
The Pas	..	..	...	41	5	31	...	....	...	....	....	....	....	..	4	....	...	1,641 60
Winnipeg	..	91	41	2146	92	1227	..	138	163	1	170	55	97	18	762	....	...	70,498 02
Total	17	492	452	6446	322	6347	5192	1279	4389	127	1227	1285	207	22	5738	5033	120	589,314 82
Previous Year	14	491	372	6010	280	3711	5725	1021	3727	139	633	810	208	13	6719	3937	152	630,268 25

N.B.—Revenue exclusive of payments made to the Department on account of the respective Agencies

STATEMENT "B," showing Manufacture and Sale of Timber Products for Commercial Lands under Yearly License and Permit during

Agency.	Lumber Ft. B. M.			Lath.		
	Manf'd.	Marketed.	On Hand.	Manf'd.	Sold.	On hand.
Calgary	11,300,267	10,580,141	4,872,674			
Edmonton	26,465,068	28,073,919	4,530,488	4,116,150	4,423,000	23,600
Kamloops	18,934,953	18,934,953				
New Westminster	76,961,712	76,961,712				
Prince Albert	111,852,236	110,841,511	30,334,585	25,618,850	17,402,570	13,647,480
Revelstoke	22,411,148	15,000,000	7,411,148			
Winnipeg	23,696,131	22,147,978	6,501,116	2,024,100	3,529,850	745,612
Total	291,621,515	282,540,214	53,650,041	31,759,100	25,355,420	14,416,692

PERMIT

Calgary	995,596	1,244,599	378,588			
Edmonton	12,347,794	12,593,514	198,263	112,750	112,750	
Kamloops	5,178,784	5,178,784				
New Westminster	10,623,258	10,623,258				
Prince Albert	4,389,337	4,636,494	897,424			
Revelstoke	341,000	341,000				
Winnipeg	3,310,608	3,878,441	1,376,200			
Total	37,186,377	38,496,090	2,850,475	112,750	112,750	
Grand total	328,807,892	321,036,304	56,500,516	31,871,850	25,468,170	14,416,692
Previous year	309,388,375	317,061,805	57,950,572	32,911,810	43,327,840	8,013,012

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Purposes cut by Holders of Timber Berths on Dominion Lands, Forestry and School the Fiscal Year ended March 31, 1919.

Railway Ties	Shingles.		Piling and Mining Props.	Saw Logs.			Fence Post.
	Manf'd sold.	Bolts Cords.	Sold lin. Ft.	Pcs. Cut.	Manf'd.	On Hand.	
149,130	.....	.....	43,111	206,584	360,064	336,434	.....
5,704	22,000	.....		387,964	407,495	297,191	.....
4,918	.....	345	20,841	178,776	178,776	Not known.	54,393
3,023	.....	28,558	26,153	100,031	102,441	2,274	.....
13,609	.....	.....	.....	946,321	1,881,128	1,102,350	.....
3,156	.....	2,355	26,891	215,556	215,556	Not known.	713,115
35,007	.....	.....	.....	262,711	452,787	241,881	.....
214,547	22,000	31,258	116,996	2,297,943	3,598,247	1,980,130	767,508

BERTHS.

.....	.....	.....	3,961,083	124,378	80,203	64,011	.....
772,000	.....	.....	69,650	198,263	184,509	121,772	37,611
15,813	.....	23	61,018	Not known.	Not known.	Not known.	388,970
2,814	.....	6,340	24,633	do	do	do	.....
.....	.....	.....	.....	29,713	74,552	7,338	102,395
13,350	.....	250	200	Not known.	Not known.	Not known.	132,100
4,630	.....	.....	.....	47,028	61,308	14,158	.....
808,607	.....	6,613	4,116,584	399,382	400,572	207,279	661,076
1,023,154	22,000	37,871	4,233,580	2,697,325	3,998,819	2,187,409	1,428,584
1,370,992	34,817	37,206	2,274,249	3,946,685	3,641,153	3,340,359	1,132,508

STATEMENT "C."—Timber Material covered by Permits issued at the respective Agencies, principally to Settlers during the year ending March 31, 1919.

Agency.	Lumber & Logs. Ft. B.M.	Fence Rails.	Poles.	Fence Posts.	Cords Cord-wood.	Railway Ties.	Telegraph & Telephone Poles.	Round Timber Lin. Ft.	Cords Shingle Bolts.
Battleford	968,376	43,610	8,470	41,595	2,342				—
Calgary	764,044	25,893	5,539	56,943	3,373	16,500	121	156,000	—
Dauphin	7,427,702	15,400	590	127,557	15,838		466		
Edmonton	6,989,948	750,788	152,927	73,907	2,887	324,724	13,840	926,376	—
Grande Prairie	1,985,130	227,203	145,835	73,201	360				—
Kamloops	5,861,094	19,463	1,665	395,120	5,331	16,813	39,638		29
Lethbridge	330,250	8,685	370	31,095	3,380			149,806	—
Moosejaw	37,140	240		8,055	630				—
New Westminster	10,353,182				533	2,814		24,633	6,235
Peace River	4,691,765	317,441	105,705	83,055	2,945				—
Prince Albert	4,146,170	143,316	42,858	219,646	22,252				—
Revelstoke	353,300	38,225	25	132,100	588	13,350	200		250
Saskatoon	1,032,187	5,775	763	30,080	2,118				—
Swift Current			24,795	45,165	3,588		2,000	40,687	—
The Pas	90,159		350		2,296				—
Winnipeg	7,325,330	54,255	19,670	236,069	86,286	89,235	7,800	7,876	—
Total	52,355,777	1,650,294	509,562	1,553,588	154,747	463,436	64,065	1,305,378	6,514
Previous Year	52,326,965	2,369,764	511,234	1,379,551	155,682	286,508	32,560	4,129,056	14,055

STATEMENT "D," showing the number of Hay Permits issued at the respective Crown Timber Offices and the amount of Hay covered thereby for the year ended March 31, 1919.

Agency.	Dominion Lands.		School Lands.		Forestry Lands.		Revenue.
	No. Pts. issued.	Tons Hay.	No. Pts. issued.	Tons Hay.	No. Pts. issued.	Tons Hay.	
							$ cts.
Battleford	467	7,996	528	9,031	41	1,777	2,585 95
Calgary	278	9,040	806	24,203	35	1,502	3,775 45
Dauphin	400	9,878	158	3,419	334	7,464	2,723 75
Edmonton	1,212	17,516	656	9,090	38	2,284	4,816 40
Grande Prairie	329	7,367	43	840			977 10
Kamloops	11	81			25	212	40 00
Lethbridge	104	2,111	128	1,514	161	4,482	748 10
Moosejaw	273	5,335	854	12,229	152	5,684	3,241 05
New Westminster							
Peace River	369	14,517	47	1,710	3	38	2,702 33
Prince Albert	719	9,233	334	3,572	127	4,834	2,771 00
Revelstoke							
Saskatoon	360	7,095	690	13,585	156	7,283	3,812 19
Swift Current	489	10,440	496	8,374	128	3,335	1,896 35
The Pas	30	865					394 00
Winnipeg	1,172	15,998	737	10,467	153	2,857	4,741 25
Total	6,212	117,472	5,477	98,034	1,353	41,752	35,224 92
Previous Year	3,769	56,661	6,329	103,312	845	23,281	29,109 48

SCHOOL LANDS DIVISION—W. T. ROLLINS.

By an amendment to section 41 of the Dominion Lands Act, assented to on the 24th May, 1918, provision was made to increase the rate of interest on School Lands disposed of subsequent to the 1st April, 1918, from 5 per cent to 6 per cent per annum. It also provided that all instalments or any portion of any instalment in arrears, whether the principal or interest, would bear interest at the rate of 7 per cent per annum. Further provision was made whereby the Minister might, with the consent of the purchaser or registered assignee, increase the rate of interest to 7 per cent per annum on all arrears owing on sales made prior to April 1, 1918.

The latter provision, no doubt, has been the cause of a large increase in the receipts for the current year.

During the months of May and June, auction sales of school lands were held at thirty-two points in the province of Saskatchewan, and at six points in the province of Alberta.

The total area disposed of in Saskatchewan, including sales to railway companies and for school sites, was 535,065·63 acres, for $12,060,096, an average of $22.54 per acre, and in Alberta, 90,310·47 acres for $1,570,557.19, an average of $17.39 per acre.

In Manitoba, 131·94 acres were disposed of for $1,211.64, an average of $9.19 per acre.

After making deductions for cancelled sales, etc., the approximate area disposed of to March 31, 1919, was as follows:

Province.	Area.	Value.	Average.
Manitoba	682,574·60	$ 6,636,181 87	$ 9 72
Saskatchewan	1,453,849·62	26,053,083 62	17 92
Alberta	872,683·57	11,822,771 15	13 55

The value of town lots disposed of to the same date was as follows: Manitoba, $5,185; Saskatchewan, $16,433; Alberta, $41,546.

Grazing.—During the fiscal year, 6,804 permits were issued in the three provinces, from which was derived a revenue of $79,275.73.

Coal.—Leases issued, 10. Leases in force, 88. Revenue derived from this source for the three provinces, $27,786.79.

Petroleum and gas.—Leases issued, 97. Leases in force, 301. Revenue produced for three provinces, $8,900.51.

Potash.—Leases issued, 8. Leases in force, 7. Revenue produced for three provinces, $210.

Fire clay.—Leases in force, 3. Revenue produced for three provinces, nil

Hay.—Leases issued, 15. Leases in force, 18. Permits isued, 5,513. Revenue produced for three provinces, $9,817.46.

Cultivation.—Permits issued, 51. Revenue produced for three provinces, $1,055.52.

Timber.—Permits issued, 194. Revenue produced for three provinces, $6,511.26.

Registration fees.—The revenue produced from this source in the three provinces amounted to $1,585.

Statements lettered "A," "B," and "C," respectively, show the revenue collected in the three provinces as classified.

The total net revenue from each province for the fiscal year was as follows:

Manitoba	$ 657,494 40
Saskatchewan	3,108,331 99
Alberta	1,302,445 99
	$5,068,272 38

As provided by several Orders in Council in that behalf, the revenue collected in each province for the fiscal year, less principal moneys of sales and also less expenditure, was paid over to the government of each province. The amounts paid were as follows:

Manitoba—	
Revenue other than principal moneys	$174,576 26
Less expenditure	15,102 00
Amount paid to province	$159,474 26
Saskatchewan—	
Revenue other than principal moneys	$561,201 21
Less expenditure	45,990 35
Amount paid to province	$515,210 86
Alberta—	
Revenue other than principal moneys	$374,817 09
Less expenditure	25,124 71
Amount paid to province	$349,692 38

In addition to the above, the following amounts were paid to the provincial governments as interest on the School Lands Fund for the fiscal year:

Manitoba	$ 4,446 28
Saskatchewan	21,758 76
Alberta	10,073 85
Total	$36,278 89

The total amount paid to each province for the fiscal year was as follows:

Manitoba	$ 163,320 54
Saskatchewan	536,969 62
Alberta	359,766 23
Total	$1,060,056 39

The total expenditure for the fiscal year was as follows:

Manitoba	$15,102 00
Saskatchewan	45,990 35
Alberta	25,124 71
Total	$86,217 06

Statements herewith lettered "D," "E," and "F," respectively, show the balance standing to the credit of the School Lands Fund for each province on the 31st March, 1919, after deducting amounts invested in Dominion of Canada debenture stock, as provided for by Order in Council dated June 7, 1917.

Manitoba—	
Total amount at credit of fund	$4,801,245 09
Amount invested in debenture stock	4,357,300 00
Balance at credit of fund	$ 443,945 09

Saskatchewan—	
Total amount at credit of fund	$7,513,836 89
Amount invested in debenture stock	6,406,300 00
Balance at credit of fund	$1,107,536 89
Alberta—	
Total amount at credit of fund	$4,758,058 43
Amount invested in debenture stock	4,170,400 00
Balance at credit of fund	$ 587,658 43

The following is an approximate statement of the work performed by the School Lands Division during the fiscal year:

Leases prepared in duplicate	130
Agreement forms to pay increased interest and circular letters	20,000
Grazing permits issued in quadruplicate	6,804
Cultivation permits issued in duplicate	51
Assignments registered	727
Requisitions for refunds prepared in duplicate	1,113
Requisitions for patents prepared in duplicate	1,119

MANITOBA SCHOOL LANDS.—A.

STATEMENT of Revenue Collected from School Lands for Fiscal Year from April 1, 1918, to March 31, 1919, both dates inclusive.

	Principal.	Interest.	Total.	Cultivation.	Grazing Rent.	Timber.	Hay.	Reg'n Fees.	Coal.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Total	483,490 72	165,876 79	649,367 51	356 92	3,956 55	2,821 02	2,369 20	4 00	10 00	658,885 20
Reg'n Fees transfd, from Dom. Lands	.....	.....	.....	.....	.....	.....	.....	240 00	.....	240 00
Total	483,490 72	165,876 79	649,367 51	356 92	3,956 55	2,821 02	2,369 20	244 00	10 00	659,125 20
Office Fees transfd to Dom. Lands	.....	.....	.....	.....	.....	27 00	498 50	.....	.....	525 50
Total	483,490 72	165,876 79	649,367 51	356 92	3,956 55	2,794 02	1,870 70	244 00	10 00	658,599 70
Refunds	572 58	42 02	614 60	.....	269 05	120 75	100 90	.....	.....	1,105 30
Total	482,918 14	165,834 77	648,752 91	356 92	3,687 50	2,673 27	1,769 80	244 00	10 00	657,494 40

SASKATCHEWAN SCHOOL LANDS.—B.

STATEMENT of Revenue Collected from School Lands for Fiscal Year from April 1, 1918, to March 31, 1919, both dates inclusive.

	Principal.	Interest.	Total.	Cultivation.	Grazing Rent.	Timber.	Hay.	Registration Fees.	Coal.	Miscellaneous.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Total	2,551,139 01	512,710 51	3,063,849 52	619 50	47,005 06	697 16	6,311 97	5 00	1,616 72	207 00	3,120,311 93
Reg'n Fees transf'd from Dom. Lands	.....	.....	.....	.....	.....	.....	.....	686 00	.....	.....	686 00
Total	2,551,139 01	512,710 51	3,063,849 52	619 50	47,005 06	697 16	6,311 97	691 00	1,616 72	207 00	3,120,997 93
Office Fees transf'd to Dom. Lands	.....	.....	.....	.....	.....	10 50	1,426 50	.....	.....	.....	1,437 00
Total	2,551,139 01	512,710 51	3,063,849 52	619 50	47,005 06	686 66	4,885 47	691 00	1,616 72	207 00	3,119,560 93
Refunds	4,008 23	1,079 37	5,087 60	20 00	5,749 61	12 50	308 95	.....	48 28	2 00	11,228 94
Total	2,547,130 78	511,631 14	3,058,761 92	599 50	41,255 45	674 16	4,576 52	691 00	1,568 44	205 00	3,108,331 99

ALBERTA SCHOOL LANDS.—C.

STATEMENT of Revenue Collected from School Lands for Fiscal Year from April 1, 1918, to March 31, 1919, both dates inclusive.

—	Principal.	Interest.	Total.	Cultivation.	Grazing Rent.	Timber.	Hay.	Reg'n Fees.	Coal.	Petroleum & Nat. Gas.	Miscellaneous.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Total	930,231 38	298,671 44	1,228,902 82	99 10	37,850 23	3,203 58	4,513 09	6 50	26,243 35	9,040 51	55 00	1,309,914 18
Reg'n Fees transf'd from Dom. Lands								643 50				643 50
Total	930,231 38	298,671 44	1,228,902 82	99 10	37,850 23	3,203 58	4,513 09	650 00	26,243 35	9,040 51	55 00	1,310,557 68
Office Fees transf'd to Dom. Lands						11 00	831 50					842 50
Total	930,251 38	298,671 44	1,228,902 82	99 10	37,850 23	3,192 58	3,681 59	650 00	26,243 35	9,040 51	55 00	1,309,715 18
Refunds	2,602 48	695 06	3,297 54		3,517 45	28 75	210 45		35 00	186 00		7,269 19
Total	927,628 90	297,976 38	1,225,605 28	99 10	34,332 78	3,163 83	3,471 14	650 00	26,208 35	8,860 51	55 00	1,302,445 99

MANITOBA SCHOOL LANDS.—D.

STATEMENT of Revenue and Expenditure on account of Manitoba School Lands for the Fiscal Year ended March 31, 1919.

Particulars.	Period.	Dr.	Cr.
		$ cts.	$ cts.
By balance on April 1, 1918..	...	...	250,326 95
" sales	12 months ended March 31, 1919	...	648,752 91
" cultivation permits	" "	...	356 92
" timber dues, hay permits, grazing rental and coal	" "	...	8,140 57
" registration fees	" "	...	244 00
" interest on fund	" "	...	4,446 28
To cost of management at Ottawa	" "	5,764 51	
" salaries, printing, advertising and general expenses	" "	9,337 49	
" revenue and interest paid to Manitoba Government	" "	159,474 26	
" interest on fund paid to Manitoba Government	" "	4,446 28	
" investments in 5% debenture bonds	" "	289,300 00	
" balance March 31, 1919	" "	443,945 09	
		912,267 63	912,267 63

NOTE.—Balance at credit of Manitoba Lands Fund on March 31, 1919, was $4,801,243.09 of which $4,357,300 is invested in Dominion of Canada debenture stock maturing October 1, 1919, at 5% per annum, as per Order in Council of June 7, 1917. Interest paid on investments for Fiscal Year 1918-19 totalled $216,890.

SASKATCHEWAN SCHOOL LANDS.—E.

STATEMENT of Revenue and Expenditure on Account of Saskatchewan School Lands for the Fiscal Year ended March 31, 1919.

Particulars.	Period.	Dr.	Cr.
		$ cts.	$ cts.
By balance on April 1, 1918..	...	...	1,075,706 11
" sales	12 months ended March 31, 1919	...	3,058,761 92
" cultivation permits	" "	...	599 50
" timber dues, hay permits, grazing rental, coal and miscellaneous	" "	...	48,279,57
" registration fees	" "	...	691 00
" interest on fund	" "	...	21,758 76
To cost of management at Ottawa	" "	17,293 54	
" salaries, printing, advertising and general expenses	" "	28,696 81	
" revenue and interest paid to Saskatchewan Government	" "	515,210 86	
" interest on fund paid to Saskatchewan Government	" "	21,758 76	
" investments in 5% debenture bonds	" "	2,515,300 00	
" balance March 31, 1919..	" "	1,107,536 89	
		4,205,796 86	4,205,796 86

NOTE.—Balance at credit of Saskatchewan School Lands Fund in March 31, 1919, was $7,513,836.89 of which $6,406,300 is invested in Dominion of Canada debenture stock maturing October 1, 1919, at 5% per annum as per Order in Council of June 7, 1917. Interest paid on investments for Fiscal Year 1918-19 totalled $284,325.

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ALBERTA SCHOOL LANDS.—F.

STATEMENT of Revenue and Expenditure on account of Alberta School Lands for the Fiscal Year ended March 31, 1919.

Particulars.	Period.	Dr.	Cr.
		$ cts.	$ cts.
By balance on April 1, 1918			731,429 53
" sales	12 months ended March 31, 1919		1,225,605 28
" cultivation permits	" "		99 10
" timber dues, hay permits, grazing rentals coal, petroleum and miscellaneous	" "		76,091 61
" registration fees	" "		650 00
" interest on fund	" "		10,073 85
To cost of management at Ottawa	" "	11,529 03	
" salaries, printing, advertising and general expenses	" "	13,595 68	
" revenue and interest paid to Alberta Government	" "	349,692 38	
" interest on fund paid to Alberta Government	" "	10,673 85	
" investments in debenture bonds	" "	1,071,400 00	
" balance March 31, 1919	" "	587,658 43	
		2,043,949 37	2,043,949 37

NOTE. Balance at credit of Alberta School Lands Fund on March 31, 1919, was $4,758,058.43 of which $4,170,400 is invested in Dominion of Canada debenture stock maturing October 1, 1919, at 5% per annum as per Order in Council of June 7, 1917. Interest paid on investments for Fiscal Year 1918-19 totalled $200,020.

LANDS PATENT BRANCH.

Report of N. O. Coté, Controller of Land Patents Branch and Registrar of Dominion Lands Patents, for the fiscal year ended March 31, 1919, with statements in relation thereto, marked A to J, inclusive.

LETTERS PATENT.

The number of letters patent issued during the period mentioned was 16,810, covering an area of 3,063,383 acres, which may be classified as follows:—

Province.	Patents.	Acres.
Manitoba	1,478	233,752
Saskatchewan	8,855	1,616,013
Alberta	6,187	1,176,750
British Columbia	266	35,693
Yukon Territory	20	1,143
Northwest Territories	4	32
	16,810	3,063,383

These grants are given in detail in the statements marked A to G, inclusive, and may be summarized as follows:—

Grants.	Patents.	Acres.
Homesteads	9,309	1,479,710
Sales	1,581	301,672
Pre-emption sales	4,214	668,333
Purchased homesteads	595	91,881
Railways	969	514,294
Special or free grants	92	4,840
Northwest half-breeds	4	501
Military bounty grants	1	141
Leases	2	786
License of occupation	11	79
Quit claims	23	
Hudson's Bay Co	6	1,017
Greater Winnipeg Water District (right of way for water supply)	3	129
	16,810	3,063,383

There was a decrease of 6,417 patents and 658,249 acres, as compared with the preceding year.

There are recorded in the Land Patents Branch 397,536 letters patent, aggregating 92,044,095 acres, which have been issued since May, 1873, to March 31, 1919.

LANDS DISPOSED OF.

Four thousand two hundred and twenty-seven homestead entries were granted during the year, aggregating an approximate area of 676,320 acres, made up as follows:—

Province.	Homestead Entries.		Acres.
Manitoba	813		
Saskatchewan	1,191		
Alberta	2,169		
British Columbia	54		
		4,227	676,320

There was a decrease in the number of homestead entries granted, as compared with the previous year, of 4,092 entries.

By Land Agencies the 4,227 homestead entries were made up as follows:—

	Entries.
Manitoba—	
Dauphin	424
LePas	1
Winnipeg	388
	813
Saskatchewan—	
Battleford	142
Moosejaw	206
Prince Albert	535
Saskatoon	122
Swift Current	186
	1,191
Alberta—	
Calgary	220
Edmonton	844
Grande Prairie	558
Lethbridge	163
Peace River	384
	2,169
British Columbia—	
Kamloops	31
New Westminster	13
Revelstoke	10
	54

The 4,227 entrants for homesteads represented 10,710 persons, as compiled from the information obtained from each entrant. Of these entries 1,388 were made by residents of the several provinces of the Dominion; six by Canadians who have returned from the United States, and 606 by persons who had obtained homestead entries, but which had been either cancelled by default or at the request of the entrants in order, in most cases, to enter for other lands; 908 were made by persons from the British Isles; 870 were by Americans; 38 by naturalized Austro-Hungarians; 97 Russians and Finns; 83 by Norwegians; 60 by Swedes; 7 by naturalized

Germans; 38 by Frenchmen; 19 by Belgians, and the remaining 107 were made by citizens of various other countries.

The privilege of pre-emption entry and purchased homestead entry, as provided for by the Dominion Lands Act 1908, was withdrawn by section 28, chapter 19, 8-9 George V, assented to 24th May, 1918. The granting of pre-emption entries and purchased homestead entries had been previously discontinued from and after the 20th March, 1918, by Order of the Governor in Council of the 16th March, 1918.

CANCELLED ENTRIES.

There were cancelled during the same period 4,634 entries, made up as follows:—

—	Manitoba.	Saskatchewan.	Alberta.	British Columbia.
Homesteads	929	1,100	1,946	140
Pre-emptions	1	301	199	
Purchased Homesteads		13	2	
Sales		1	2	
Total	930	1,415	2,149	140

SALES.

Five hundred and thirty-seven sales were made during the fiscal year for 20,469 acres of land, with an average for each sale of about 38¼ acres.

NEWLY SURVEYED LANDS THROWN OPEN TO HOMESTEAD ENTRY.

During the past fiscal year newly surveyed lands comprised in forty-six townships were made available for homestead entry in the following land agencies:—

Edmonton, Alberta, in twenty-three townships; Peace River, Alberta, in seven townships and Grande Prairie, Alberta, in sixteen townships.

ACCOUNTS AND REVENUE.

There are at present kept in the Branch about 40,000 accounts in connection with purchased homesteads, pre-emptions and ordinary sales.

During the fiscal year $2,173,490.07, including $274,335.78 interest on deferred payments, was received on account of purchased homesteads, pre-emptions and ordinary sales, being a decrease of $796,770.69, as compared with the payments received during the previous year.

REFUNDS.

There were 1,780 refunds made, amounting to $60,295.89, as follows:—

On account of improvements on cancelled homesteads, 727 refunds	$43,419 68
Overpayments on sales and moneys paid on cancelled purchased homestead entries and pre-emption sales, 1,053 refunds	16,876 21
	$60,295 89

A.

STATEMENT OF LETTERS PATENT covering Dominion Lands situate in Manitoba, Saskatchewan, Alberta, Northwest Territories, British Columbia and the Yukon Territory issued from the Department of the Interior during the fiscal year ending March 31, 1919, as compared with the fiscal year ending March 31, 1918, and recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1918 to March 31, 1919.		From April 1, 1917 to March 31, 1918	
		Patents.	Acres.	Patents.	Acres.
1	Alberta Railway and Irrigation Co's sales	34	61,267	25	13,276
2	British Columbia homesteads	149	19,015	121	15,255
3	British Columbia sales	15	2,140	31	612
4	Coal surface sales	4	772	2	6
5	Greater Winnipeg Water District	3	129	...	...
6	Homesteads	9,065	1,445,425	14,318	2,301,330
7	Homesteads, Peace River Block	89	14,230	104	16,571
8	Hudson's Bay Co	6	1,017	...	...
9	Leases	2	786	...	...
10	License of occupation	11	79	44	331
11	Military bounty grants	1	141	1	159
12	Military homesteads	1	320	1	322
13	Mining lands sales	7	405	9	455
14	Mineral rights (676 acres)	3	...	4	...
15	Northwest half-breed grants	4	501	5	797
16	Parish sales	1	...	3	1,163
17	Pre-emption sales	4,214	668,333	6,138	976,395
18	Purchased homesteads	595	91,881	876	137,253
19	Quit claim, special grants (2,433 acres)	23	...	25	...
	Railways:—				
20	Alberta and Great Waterways Railway Co	24	317	30	418
21	Calgary and Edmonton Railway Co	213	226,645	122	46,915
22	Canadian Northern Alberta Railway Co	78	531	1	6
23	Canadian Northern Railway Co	60	28,159	46	37,262
24	Canadian Northern Manitoba Railway Co	4	73	...	...
25	Canadian Northwestern Railway Co	26	319	1	2
26	Canadian Pacific Railway grants	23	923	26	222
27	Canadian Pacific Railway roadbed and station grounds	16	71	21	70
28	Central Canada Railway Co	19	235	14	191
29	Edmonton, Dunvegan and British Columbia Railway Co	81	1,099	74	1,285
30	Grand Trunk Pacific Railway	3	27	11	222
31	Grand Trunk Pacific Branch Lines Co	3	43	9	74
32	Kootenay Central Railway Co	...	...	1	1
33	Manitoba and Northwestern Railway Co	1	153	5	11
34	Qu'Appelle Long Lake and Saskatchewan Railroad and Steamboat Co	418	255,699	147	35,617
35	Sales	390	23,490	376	34,299
36	Sales, Peace River Block	2	190	...	...
37	School lands sales	1,110	212,985	562	96,844
38	Special grants	92	4,840	66	4,096
39	Yukon Territory homesteads	5	720	...	...
40	Yukon Territory sales. (52 acres, Under rights)	15	423	8	172
	Totals	16,810	3,063,383	23,227	3,721,632

B.

STATEMENT OF LETTERS PATENT covering Dominion Lands situate in the Province of Manitoba, issued from the Department of the Interior during the fiscal year ending March 31, 1919, as compared with the fiscal year ending March 31, 1918, and Recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1918, to March 31, 1919.		From April 1, 1917, to March 31, 1918.	
		Patents.	Acres.	Patents.	Acres.
1	Greater Winnipeg Water District	3	129		
2	Homesteads	1,072	167,701	1,138	183,242
3	Mining lands, sales	6	276	8	301
4	Northwest half-breed grants	2	240		
5	Parish sales	1		2	377
6	Pre-emption sales	4	640	2	279
7	Quit claim, special grants (93 acres)	1		1	
	Railways:—				
8	Canadian Northern Railway Co	19	232	4	61
9	Canadian Northern Manitoba Railway Co	4	73		
10	Canadian Pacific Railway grants	1	6	1	7
11	Canadian Pacific Ry. roadbed and station grounds	8	6	17	28
12	Grand Trunk Pacific Railway Co			1	1
13	Manitoba and Northwestern Railway Co			2	3
14	Sales	36	1,956	41	2,198
15	School lands sales	314	62,133	147	28,436
16	Special grants	4	360	7	62
	Totals	1,478	233,752	1,371	214,996

C.

STATEMENT OF LETTERS PATENT covering Dominion Lands situate in the Province of Saskatchewan, issued from the Department of the Interior during the fiscal year ending March 31, 1919, as compared with the fiscal year ending March 31, 1918, and recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1918 to March 31, 1919.		From April 1, 1917 to March 31, 1918.	
		Patents.	Acres.	Patents.	Acres.
1	Homesteads	4,554	729,282	7,794	1,251,722
2	Hudson's Bay Co	2	389		
3	License of occupation	8	71	20	92
4	Military homesteads	1	320	1	322
5	Mineral rights (20 acres)	1			
6	Northwest half-breed grants	1	160	2	319
7	Pre-emption sales	2,849	452,314	3,722	591,615
8	Purchased homesteads	418	64,823	593	92,765
9	Quit claim, special grants, (660 acres)	10		21	
	Railways:—				
10	Calgary and Edmonton Railway Co	6	9,414	1	159
11	Canadian Northern Railway Co	38	27,901	42	37,201
12	Canadian Pacific Railway grants	1	2	25	215
13	Canadian Pacific Railway roadbed and station grounds	1	3	3	33
14	Grand Trunk Pacific Railway			6	19
15	Grand Trunk Pacific Branch Lines Co			1	6
16	Manitoba and Northwestern Railway Co	1	153	3	8
17	Qu'Appelle Long Lake and Saskatchewan Railroad and Steamboat Co	418	255,699	147	35,617
18	Sales	157	11,761	166	14,619
19	School lands sales	362	61,612	190	26,721
20	Special grants	27	2,079	28	2,206
	Totals	8,855	1,616,013	12,765	2,053,639

D.

STATEMENT OF LETTERS PATENT covering Dominion Lands situate in the Province of Alberta, issued from the Department of the Interior during the fiscal year ending March 31, 1919, as compared with the fiscal year ending March 31, 1918, and recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1918, to March 31, 1919.		From April 1, 1917, to March 31, 1918.	
		Patents.	Acres.	Patents.	Acres.
1	Alberta Railway and Irrigation Co 's sales	34	61,267	25	13,276
2	Coal surface sales	4	772	2	6
3	Homesteads	3,439	548,442	5,386	866,365
4	Hudson's Bay Co	3	622	—	—
5	Leases	1	765	—	—
6	License of occupation	3	8	24	239
7	Military bounty grants	1	141	1	159
8	Mining lands sales	1	129	1	154
9	Mineral rights (656 acres)	2	—	4	—
10	Northwest half-breed grants	1	101	3	478
11	Parish sales	—	—	1	786
12	Pre-emption sales	1,361	215,379	2,414	384,501
13	Purchased homesteads	175	27,040	282	44,477
14	Quit claim, special grants (1,680 acres)	9	—	3	—
	Railways:				
15	Alberta and Great Waterways Railway Co	24	317	30	418
16	Calgary and Edmonton Railway Co	207	217,201	121	46,756
17	Canadian Northern Railway Co	3	26	—	—
18	Canadian Northern Alberta Railway Co	78	531	1	6
19	Canadian Northwestern Railway Co	26	319	1	2
20	Canadian Pacific Railway grants	20	900	—	—
21	Canadian Pacific Railway roadbed and station grounds	1	8	—	—
22	Central Canada Railway Co	19	235	14	191
23	Edmonton, Dunvegan and British Columbia Railway Co	81	1,099	74	1,285
24	Grand Trunk Pacific Railway	3	27	4	202
25	Grand Trunk Pacific Branch Lines Co	3	43	8	68
26	Sales	194	9,747	167	17,466
27	School lands sales	434	89,240	225	41,687
28	Special grants	60	2,391	28	1,813
	Totals	6,187	1,176,750	8,819	1,420,335

E.

STATEMENT OF LETTERS PATENT covering Dominion Lands situate in the Province of British Columbia, issued from the Department of the Interior during the fiscal year ending March 31, 1919, as compared with the fiscal year ending March 31, 1918, and recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1918, to March 31, 1919.		From April 1, 1917 to March 31, 1918.	
		Patents.	Acres.	Patents.	Acres.
1	British Columbia homesteads	149	19 015	121	15,255
2	British Columbia sales	15	2,140	31	612
3	Homesteads, Peace River Block	89	14,230	104	16,571
4	Leases	1	21	—	—
5	Purchased homesteads	2	18	1	11
	Railways:				
6	Canadian Pacific Railway grants	1	15	—	—
7	Canadian Pacific Railway roadbed and station grounds	6	54	1	9
8	Kootenay Central Railway Co	—	—	1	1
9	Sales—Peace River Block	2	190	—	—
10	Special grants	1	10	2	10
	Totals	266	35,693	261	32,469

F.

STATEMENT OF LETTERS PATENT covering Dominion Lands situate in the Yukon Territory, issued from the Department of the Interior during the fiscal year ending March 31, 1919, as compared with the fiscal year ending March 31, 1918, and recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1918 to March 31, 1919.		From April 1, 1917 to March 31, 1918.	
		Patents.	Acres.	Patents.	Acres.
1	Yukon Territory homesteads	5	720	.....	.....
2	Yukon Territory sales (52 acres, Under rights)	15	423	8	172
	Totals	20	1,143	8	172

G.

STATEMENT OF LETTERS PATENT covering Dominion Lands situated in the Northwest Territories, issued from the Department of the Interior during the fiscal year ending March 31, 1919, as compared with the fiscal year ending March 31, 1918, and recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1918 to March 31, 1919.		From April 1, 1917 to March 31, 1918.	
		Patents.	Acres.	Patents.	Acres.
1	Hudson's Bay Co.	1	6	.....	.....
2	Sales	3	26	2	16
3	Special grants	.....	.....	1	5
	Totals	4	32	3	21

H.

STATEMENT showing the number of Homestead Entries made during the fiscal year ending March 31, 1919, the Nationality of the Homesteaders and the Provinces in which the entries were made.

Nationalities.	Provinces.				Total.
	Manitoba.	Saskatchewan.	Alberta.	British Columbia.	
Canadians from Ontario	100	210	283	6	599
do do Quebec	36	93	130	1	260
do do Nova Scotia	7	16	29	1	53
do do New Brunswick	4	4	23		31
do do Prince Edward Island	1	3	12	1	17
do do Manitoba	132	55	49	2	238
do do Saskatchewan	10	50	15		75
do do Alberta		4	82	1	87
do do British Columbia	1	1	18	8	28
Persons who had previous entry	117	159	324	6	606
Newfoundlanders			1	1	2
Canadians returned from the United States		2	4		6
Americans	49	264	551	6	870
English	173	147	311	8	639
Scotch	52	37	88	5	182
Irish	24	25	37	1	87
French	21	7	10		38
Belgians	7	6	6		19
Swiss		2	6		8
Italians		2	17		21
Roumanians		6	1		7
Syrians		1			1
Germans	1		6		7
Austro-Hungarians	25	8	5		38
Hollanders	3	2	10		15
Danes (other than Icelanders)	1	5	23		29
Icelanders	10				10
Swedes	3	23	31	3	60
Norwegians	7	22	54		83
Russians (other than Finns)	13	29	31	1	74
Finns	15	4	3	1	23
Serbians			1		1
Bulgarians					
Chinese			4		4
Japanese	1	1			2
Persians					
Australians			1		1
New Zealanders					
Hindoos					
Greeks		1			1
Poles		2	1		3
Montenegrins			2		2
Total	813	1,191	2,169	54	4,227

Number of souls represented by above entries 10,710.

I.

STATEMENT showing the number of Homestead Entries made in the Province of Manitoba, Saskatchewan, Alberta and British Columbia during the fiscal year ending March 31, 1919, by persons coming from the United States of America.

States.	Provinces.				Total.
	Manitoba.	Saskatchewan.	Alberta.	British Columbia.	
Alabama			2		2
Alaska					
Arizona					
Arkansas		1	2		3
California		1	3		4
Carolina, North			8		8
Carolina, South			1		1
Colorado		2	6		8
Columbia, District of					
Connecticut			2		2
Dakota, North	12	38	41		91
Dakota, South	1	5	11		17
Delaware					
Florida		1			1
Georgia					
Idaho		2	7		9
Illinois	5	16	29	2	52
Indiana	3	4	23		30
Indian Territory					
Iowa	7	18	34	1	60
Kansas		7	11		18
Kentucky		8	7		15
Louisiana		1	1		2
Maine		2	6		8
Maryland		2			2
Massachusetts	1	11	9		21
Michigan	3	17	48		68
Minnesota	6	57	86		149
Mississippi					
Missouri		5	21		26
Montana	1	7	11		19
Nebraska		4	21		25
Nevada					
New Hampshire	1	2	3		6
New Jersey		1	3		4
New Mexico			8		8
New York	1	5	18		24
Ohio	2	6	13		21
Oklahoma			8		8
Oregon		2	13		15
Pennsylvania		9	15	1	25
Rhode Island		3	2		5
Tennessee		1	7		8
Texas		5	7		12
Utah			10		10
Vermont	1	2	5		8
Virginia			2		2
Virginia, West			2		2
Washington		4	20	1	25
Wisconsin	5	17	29	1	52
Wyoming					
Total	49	266	555	6	876

REPORT OF THE ACTING SUPERINTENDING ACCOUNTANT.—G. D. POPE.

Statements of revenue collected from various sources during the fiscal year ended March 31, 1919, as follows:—

A. Dominion lands, including Yukon	$3,615,958 52
B. Ordnance lands	4,819 27
C. School lands	5,087,875 81
D. Registration fees, Yukon	789 22
E. Fines and forfeitures, N.W.T.	35 00
F. Casual revenue	12,381 71
G. Seed grain and relief repayments	1,378,275 76
H. Sales of land, special account	239,075 10
Total	$10,339,210 39

A statement of revenue on account of Dominion Lands (marked I) shows the receipts, classified under subheads.

Statement (marked J) shows a comparison between the receipts on account of revenue for the previous twelve months.

DOMINION LANDS REVENUE (Cash and Scrip) for the fiscal year ending March 31, 1919.

Agencies.	Cash.	Scrip.	Total.
	$ cts.	$ cts.	$ cts.
Yukon Territory—			
Sales of land	593 46		593 46
Rentals of land	11,648 07		11,648 07
Map sales, office fees, etc.	17 50		17 50
Timber dues	7,936 23		7,936 23
Hay permits	30 55		30 55
Mining fees	37,446 65		37,446 65
Export tax on gold	48,677 07		48,677 07
Free certificates for export of gold	10 50		10 50
Hydraulic leases	4,393 72		4,393 72
Dredging leases	1,695 10		1,695 10
Homestead fees	30 00		30 00
Interim Receipt Account	15 00		15 00
	112,493 85		112,493 85
Dominion Lands Agencies—			
Battleford	57,712 66		57,712 66
Calgary	402,754 91	293 41	403,048 32
Dauphin	8,196 98		8,196 98
Edmonton	29,406 09		29,406 09
Grande Prairie	11,639 54		11,639 54
Kamloops	7,098 03		7,098 03
Lethbridge	194,733 54		194,733 54
Moosejaw	519,798 79		519,798 79
New Westminster	1,773 36		1,773 36
Peace River	8,012 10		8,012 10
Prince Albert	15,309 74		15,309 74
The Pas	145 20		145 20
Revelstoke	1,610 34		1,610 34
Saskatoon	256,522 66		256,522 66
Swift Current	744,052 30		744,052 30
Winnipeg	20,991 37		20,991 37
	2,279,757.61	293 41	2,280,051 02

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DOMINION LANDS REVENUE (Cash and Scrip) for the fiscal year ended March 31, 1919 —*Concluded.*

Agencies.	Cash.	Scrip.	Total
	$ cts.	$ cts.	$ cts.
Crown Timber Agencies—			
Battleford	902 02		902 02
Calgary	27,295 79		27,295 79
Dauphin	22,174 59		22,174 59
Edmonton	64,118 21		64,118 21
Grande Prairie	1,011 48		1,011 48
Kamloops	23,295 45		23,295 45
Lethbridge	1,856 24		1,856 24
Moosejaw	408 85		408 85
New Westminster	96,723 84		96,723 84
Peace River	625 30		625 30
Prince Albert	83,560 96		83,560 96
The Pas	1,247 60		1,247 60
Revelstoke	15,923 71		15,923 71
Saskatoon	1,291 63		1,291 63
Swift Current	660 73		660 73
Winnipeg	59,695 65		5 695 65
	400,792 05		400,792 05
Miscellaneous—			
Rocky Mountain Park	46,978 49		46,978 49
Jasper Park	4,285 91		4,285 91
Yoho Park	1,074 38		1,074 38
Waterton Lakes Park	1,992 95		1,992 95
Elk Island Park	10 25		10 25
Buffalo Park	145 95		145 95
Glacier Park	43 22		43 22
Fort Anne Park	116 37		116 37
Antelope Park	195 20		195 20
Revelstoke Park	20 00		20 00
Moose Mountain Buffalo Park	102 40		102 40
Point Pelee Park	31 60		31 60
Lac la Biche	10 00		10 00
Survey fees	48,287 00		48,287 00
Irrigation fees	483 87		483 87
Map sales, office fees, etc	8,940 17		8,940 17
Fees Board of Examiners, D.L.S	100 00		100 00
Mining fees	14,895 60		14,895 60
Grazing lands	148,179 55		148,179 55
Grazing lands (improvements)	560 00		560 00
Hay permits	22,054 51		22,054 51
Coal lands	375,895 14		375,895 14
Dredging leases	50 00		50 00
Stone quarries	8,221 59		8,221 59
Rent of water power	1,452 32		1,452 32
Suspense Account	6,837 93		6,837 93
Petroleum	107,230 41		107,230 41
Sand, stone and gravel	1,104 44		1,104 44
Forestry Branch—sale of trees, etc	2,604 17		2,604 17
Fishing permits	824 00		824 00
General sales	2,493 80		2,493 80
Rentals	651 84		651 84
Miscellaneous	1,579 47		1,579 47
Irrigation sales	11,556 38	30 00	11,586 38
Potash leases	3,906 10		3,906 10
	822,915 01	30 00	822,945 01
Total revenue	3,615,958 52	323 41	3,616,281 93
Less refunds	76,031 02		76,031 02
	3,539,927 50	323 41	3,540,250 91

STATEMENT of Ordnance Lands revenue for the fiscal year ended March 31, 1919.

Fiscal Year.	Gross Revenue	Refunds.	Net Revenue.
	$ cts.		$ cts.
1918-1919	4,819 27		4,819 27

STATEMENT of Receipts on account of School Lands for the fiscal year ended March 31, 1919.

Manitoba School Lands.	Saskatchewan School Lands.	Alberta School Lands.	Total.
$ cts.	$ cts.	$ cts.	$ cts.
658,599 70	3,119,560 93	1,309,715 18	5,087,875 81

STATEMENT of Registration Fees in the Yukon Territory for the fiscal year ended March 31, 1919.

Fiscal Year.	Gross Revenue.	Land Assurance Fund.	Net Revenue.
	$ cts.	$ cts.	$ cts.
1918-1919	789 22	49 62	739 60

STATEMENT of Fines and Forfeitures for the fiscal year ended March 31, 1919.

Fiscal Year.	Gross Revenue.	Refunds.	Net Revenue.
	$ cts.		$ cts.
1918-1919	35 00		35 00

STATEMENT of Casual Revenue for the fiscal year ended March 31, 1919, $12,356.71.

STATEMENT showing net repayments on account of seed grain and relief mortgages for the fiscal year ended March 31, 1919.

Year.	Gross Collections.	Refunds.	Net Receipts,
	$ cts.	$ cts.	$ cts.
1876	824 62	160 70	663 92
1886-7-8	1,191 66		1,191 66
1890	8 35		8 35
1894		112 27	Minus 112 27
1895	223 67		223 67
1896	66 23		66 23
1901	145 52		145 52
1905	83 83		83 83
1908	4,122 58	46 59	4,075 99
1909	337 63		337 63
1911	6,285 52	63 49	6,222 03
1912	7,614 59	178 79	7,435 80
1913	1,125 87	33 60	1,092 27
1914	5,085 32		5,085 32
1915, Seed Grain	843,875 48	15,514 11	828,361 37
1915, Relief	480,722 32	16,219 99	464,502 33
1917	9,450 67	2 00	9,448 67
1918	13,015 85	345 83	12,670 02
Relief Advances	4,096 05	37 23	4,058 82
	1,378,275 76	32,714 60	1,345,561 16

DOMINION LANDS REVENUE (Cash and Scrip) for the fiscal year ended March 31, 1919, credited to the special accounts of the following railway companies.

Railway Company.	Date of Order in Council.	Amount.	Total.
Calgary and Edmonton Railway	August 17, 1908	$ 97,429 20	
Lake Manitoba Railway and Canal Co. / Canadian Northern Railway System	December 5, 1908	141,645 90	
	Total		$239,075 10

STATEMENT of gross cash receipts on account of Dominion Lands Revenue for the fiscal year ended March 31, 1919.

Homestead fees	$ 42,190 00
Sale fees	170 00
Improvements	49,225 97
General sales of land	2,192,860 81
Timber dues	408,728 28
Rental from grazing lands	148,179 55
Export tax on gold, hay, coal, petroleum, mining fees, etc	630,975 74
Canadian National Parks	55,006 72
Survey fees	48,287 00
Map sales, rentals, office fees and miscellaneous	40,334 45
Total	$3,615,958 52

STATEMENT of gross receipts (Cash and Scrip) on account of Dominion Lands Revenue for the fiscal year ended March 31, 1919, compared with the previous fiscal year.

Particulars.	1918-1919	1917-1918	Increase.	Decrease.	Net Decrease.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Dominion Lands Agencies	2,280,051 02	3,219,191 03		939,140 01	
Crown Timber Agencies	400,792 05	469,767 94		68,975 89	
Hay, Mining, Coal, Grazing, etc.	767,938 29	665,881 27	102,057 02		
Yukon Territory	112,493 85	150,809 32		38,315 47	
Canadian National Parks	55,006 72	52,160 52	2,846 20		
	3,616,281 93	4,557,810 08	104,903 22	1,046,431 37	941,528 15

During the fiscal year ending March 31, 1919, there were no public sales of Ordnance Lands held; but with respect to the land formerly sold or occupied under lease, with option to purchase, four parcels or lots situated in the several localities hereunder mentioned, and in the annexed statement marked "A," have been fully paid and letters-patent issued therefor.

1. *Grand Falls, N.B.*—One Town Lot, No. 15, located within the boundaries of this reserve was paid for in full during the last fiscal year, the sum of $127.70 having been received, and letters-patent issued.

2. *Ottawa.*—Ordnance lands in this locality are occupied by tenants under leases originally granted by the Imperial authorities, in which it is provided that the lessees may, upon payment in cash of the purchase price in full for the land occupied, convert their leasehold into freehold, and obtain Crown Patent, of these parcels or lots, two half lots were paid for in full and letters-patent issued. The amount of the purchase money received within the last fiscal year was $225.45.

3. *Port Maitland.*—This reserve is situated on the westerly side of the Grand River at its confluence with Lake Erie in the Township of Dunn, County of Haldimand. It was surveyed and subdivided by the authority of the department in 1916 and the squatters, by whom the land was occupied, were permitted to purchase their holdings at a valuation or lease the same for a period of years at a reasonable annual rental with the option of purchase. During the past fiscal year one of these squatters took advantage of the privilege offered and paid the purchase price in full for his holding, amounting to $24.63, and received letters-patent therefor.

The following statements are hereto annexed:—

A.

STATEMENT giving the number of Lots and part Lots sold or redeemed, the amounts for which such Lots were originally disposed of and the sum received as instalment or balance of purchase money during the fiscal year ended the 31st March, 1919.

Locality.	No. of Lots sold or redeemed.	Amount of consideration of purchase money.	Amount received on account during fiscal year.	Remarks.
		$ cts.	$ cts.	
Port Maitland	1 Town Lot.	24 63	24 63	In full.
Ottawa	1 Town Lot.	120 00	128 70	"
Ottawa	1 Town Lot.	90 00	96 75	"
Grand Falls	1 Town Lot.	105 00	120 70	"
		339 63	377 78	

B.

STATEMENT naming the various Localities where Ordnance Lands are situated on account of which moneys have been received during the fiscal year ended the 31st March, 1919.

Amherstburg	$ 2 00
Burlington Beach	60 00
Carillon	20
Chambly	331 00
Edmundston	1 00
Elmsley	10 20
Fort Cumberland	64 00
Fort Erie	2 00
Grand Falls	137 70
Grenville	7 20
Kingston	203 50
Montague	8 00
Nepean	1 00
Ottawa	916 37
Owen Sound	61 50
Oxford	33 35
Point Edward	200 00
Point Pelee	19 73
Port Maitland	70 27
Prescott	2 00
Quebec	880 00
Queenston	4 00
St. Croix River	1 00
St. Joseph Island	5 00
Sorel	1,674 00
Storrington	1 00
Wolford	100 00
	$ 4,796 02
Fees	23 25
	$ 4,819 27

C.

STATEMENT showing the receipts each month of the year classified as fees, rents, or interest equivalent to rent and principal for the fiscal year ended the 31st March, 1919.

Fees	$ 23 25
Rent or interest	4,368 99
Principal	427 03
Total	$ 4,819 27

D.

STATEMENT showing amounts due and unpaid on account of purchase money and rent or interest for the fiscal year ended the 31st March, 1919.

Locality.	Rent or Interest.	Principal.	Total.
	$ cts.	$ cts.	$ cts.
Burlington Beach		100 00	100 00
Beaver Harbour	8 00		8 00
Chambly		161 00	161 00
Dalhousie		24 84	24 84
Fort Erie	100 00		100 00
Grand Falls		418 96	418 96
Marlborough	11 00		11 00
Niagara		734 95	734 95
Nepean	208 32		208 32
Owen Sound	33 25		33 25
Oxford	2 50		2 50
Oromocto	0 50		0 50
Ottawa		811 27	811 27
Port Maitland	35 00		35 00
Presqu'isle	4 00		4 00
Sorel	100 72		100 72
Tay	40 00		40 00
Wolford	102 40		102 40
	645 69	2,251 02	2,896 71

PART II.

DOMINION PARKS BRANCH.

DOMINION PARKS.

REPORT OF THE COMMISSIONER, J. B. HARKIN.

Though the war ended during the fiscal year 1918-19 the work in connection with the Dominion Parks Branch necessarily was continued throughout the year on a war basis. In other words there were but two main features, the maintenance of the existing roads, bridges, trails, etc., with the minimum of expenditure; and the preparation of plans for extension of the work in future years. Details with respect to the work done are covered in the reports herewith from the superintendents of the individual parks.

Throughout the year the work in connection with the parks service has been planned and carried out primarily with a view to bringing into Canada a revenue of millions of dollars from foreign tourist traffic. Special attention has been given to this subject because it is recognized that on account of the war debt it is vital that Canada should concentrate on the development of revenue producing activities.

The object lesson of Switzerland and other European countries has taught the world that outstanding scenic and recreation areas are as distinctly natural resources as timber, minerals or agricultural crops, and that trade (tourist traffic) in them is capable of producing national revenue just as successfully as trade in any of the other natural assets.

A celebrated English Alpinist asserted some years ago that Canada's mountain areas are destined to become "the playground of the world." Canada's national parks contain the most attractive portions of the mountains and therefore are the potential "playground of the world."

The planning of parks work has been based upon an analysis of the tourist business of preceding years.

Publicity experts at the Pacific Coast estimate at $350 the average expenditure of each foreign tourist. But allowing for an expenditure by each foreign visitor to the Rockies of only $250, and this includes the ever-increasing numbers who remain the entire season and spend many times that much and those who go out with pack trains to the outlying portions of the park who often spend thousands, it is clear that the money brought into Canada by these visitors reaches a very large sum. Take the year 1915, the last year in which owing to war conditions there was a heavy tourist travel from the States. The number of visitors to Rocky Mountains Park in that year was approximately 90,000. Over 65,000 of these visitors were foreigners. Allowing for an expenditure of $250 each it follows that over $16,000,000 of foreign money was brought into Canada by the people of other countries who were attracted to this park, which is just the same as if we had exported goods to those countries and received money in return. Now it is interesting to compare the value on an acreage basis of our exports of wheat with what we may call our export in scenery. The acreage of Rocky Mountains Park in 1915 was 1,800 square miles, or 1,152,000 acres, and the value of the foreign tourist traffic it attracted was roughly speaking $16,000,000. This works out to a per acreage value of $13.88.

The total wheat exports for the same year were valued (according to figures furnished by the Department of Customs) at $74,293,548. The number of acres under

wheat cultivation in all Canada were 15,109,415 which means that the value of our wheat exported that year was equivalent to $1.91 per acre. That is, our export of scenery per acre in Rocky Mountains Park was equal to almost three times the acreage value of our exportable wheat surplus.

This does not take into account the money which was kept in Canada by the 24,000 Canadians who took their holidays in the parks in that year and which would add another $2,000,000 or $3,000,000 to the total.

It must be remembered, however, that the tourist possibilities of our Canadian parks have not yet been much more than scratched. The revenues derived represent only a small percentage of their possible production, and as I have pointed out before, the sale of scenery never diminishes the capital stock. When we sell a bushel of wheat we sell so much of the constituents of the soil, so many nitrates, so many phosphates, etc., which leaves the soil poorer, but when we dispense scenery we are like the two old people in the Greek fairy tale who entertained Jove and his son. No matter how much we give our guests there is still as much wine left in the pitcher. The dispensers of all other natural commodities are bound in the end, unless they partially replace what they sell, to find themselves in the unfortunate position of Mother Hubbard.

It is scarcely realized how large a sum this loss to the country through the exports of foodstuffs represents. Ferguson Meade, editor of the Southern Planter, in an article in the American Review of Reviews for April, 1919, is authority for the statement that every time we export a bushel of wheat we export 60 cents' worth of the chemical constituents of the soil which form the food of plants. Now, in 1918, we exported 150,392,937 bushels of wheat and 9,931,148 barrels of wheat flour, which represents another 45½ million bushels, or approximately 196,000,000 in all.

On the above basis this represents a loss to the country of the fertility of the soil in one year of $117,500,000 for wheat crops alone. The export of other foodstuffs represents a similar loss in varying degrees.

On the other hand, once national scenery is set aside and protected and opened up for public enjoyment, as it is in our national parks, it tends to increase in value, and the more it is used the more valuable it becomes, because tourists who are delighted with their visit not only decide to come again, but they go home and tell their friends and acquaintances to come too, and the tendency each year, as the parks become better known, is for the traffic to keep on growing.

The Parks Service calculations in regard to the revenue potentialities of the parks have a special application to the rapidly developing difficulties in regard to adverse balance of trade, especially as the great bulk of Canada's foreign tourist traffic comes from the United States. It will be remembered that during the past three years, in order to restore our balance of trade with the United States, it has been necessary to establish credits there by means of loans. With this in view, Sir Thomas White, in 1915, floated a loan for $45,000,000 in New York, and in 1916 a similar loan was floated for $75,000,000, or an average of $60,000,000 for the two years. Now, it is quite clear that the same end could be gained by increasing tourist traffic to Canada from the United States. If we could attract $60,000,000 worth of tourist traffic to Canada from the United States each year, and this should not be difficult when it is remembered that the tourist traffic of Maine is valued at $40,000,000 we could wipe out our unfavourable balance of trade.

There is another matter in regard to which tourist traffic is of special significance to the Dominion:

The annual interest due on the loans floated by the Government for war purposes is $72,500,000. This seems an enormous sum, but it is less than half the sum derived in one year by Switzerland from tourist traffic in pre-war days. Canada's mountain area is roughly estimated at 200,000 square miles. The area of Switzerland is only about 15,000 square miles.

The possibilities of Canada's mountains and in addition of Canada's recreational areas elsewhere have forced the Parks Service to the conclusion that all its work must be developed primarily with the view to promoting tourist traffic because it appears to offer a very effective means of helping meet the country's financial conditions.

VISITORS TO ROCKY MOUNTAINS PARK.

The number of Canadian and foreign visitors registered at the Rocky Mountains Park during the past seven years, are as follows:—

Season.	Canadian.	Foreign.	Total.
1911-12	30,000	43,725	73,725
1912-13	45,709	30,173	75,882
1913-14	32,881	15,016	47,897
1915-16	24,503	65,504	90,007
1916-17	36,978	20,272	57,250
1917-18	46,033	21,746	67,779
	216,104	196,436	412,540

Estimated on a basis of $250 expenditure for each foreign tourist and $100 for each Canadian this means that the Canadian parks attracted over $49,000,000 of foreign money in these seven years and $21,000,000 Canadian or a total revenue of $70,000,000. The total appropriations for parks in this period were about $2,500,000. This represents a return of over twenty-seven times the capital invested.

The figures and calculations recited above are given for the purpose of directing attention to the financial potentialities of an active policy of development in regard to National Parks and general tourist traffic. Canada naturally looks to the United States for the bulk of its foreign tourist traffic.

Lest it should be imagined that Canada has no competition in this tourist business attention is called to the very active campaign carried on in the United States—"The See America First" movement—for the purpose of keeping the American tourist in the United States.

Printers' Ink, New York, March 27, 1919, a publication devoted to the advertising interests is authority for the statement that an advertising appropriation said to be in the neighbourhood of $800,000 has been decided upon by the Railroad Administration for the purpose of increasing tourist travel during the coming season. Gerret Fort, Assistant Director, in an interview with *Printers' Ink* with regard to the above said it was intended to devote approximately one-half of the above sum to the encouragement of tourist traffic to the American National Parks and the Pacific Coast.

MOTOR TRAVEL.

The most gratifying feature with regard to tourist traffic to the parks during the past year has been the marked increase in travel by motor. In the parks which can be reached only by railway there was a noticeable decrease in the number of visitors, but the three parks accessible by motor road had a most successful season. Buffalo and Waterton Lakes Parks showed an increase of almost one hundred per cent, while Banff, which was expected to suffer from the falling off of railway travel, owing to the large number of motorists from the prairies, had a very satisfactory season. While a large percentage of cars came from Calgary, there was also a considerable number from Edmonton, Regina and adjacent towns, as well as from Winnipeg and from Montana.

This shows how wide is the field from which motor travel to the parks may be drawn, and indicates the enormous possibilities involved in this form of traffic. A large increase in motor travel from year to year can confidently be looked for, and it

follows that additional attention will have to be paid to the constructiono and maintenance of high class roads and to provision for the accommodationo of this class of visitor.

The development in motor travel from the prairies has one most gratifying aspect and that is it indicates that the wonderful natural parks of the Rockies are now within reach of the people of the prairie provinces. In the past it has been a matter of regret that situated as they were, the parks could not serve all the people of Canada. With the coming of good roads and the low priced automobile, they are within easy reach of practically half of the country. They seem destined to become the future playground for a large part of the west.

WILD LIFE IN THE PARKS.

The great abundance of all forms of wild life in the parks is very satisfactory. It shows that sanctuaries properly and fearlessly administered will inevitably result not only in the preservation but in the very large increase of all species of wild life. In the parks to-day the visitor does not need to be told that wild life is abundant. He meets with evidence of the fact wherever he goes.

The Bighorn sheep has now become so plentiful that sometimes between two and three hundred are seen in one flock. A motorist along the motor highway west of Banff counted over 350 in one week-end last April. They have also become so tame that cars sometimes have to slow up to let the sheep off the road. The deer, black bear, goat, elk, beaver and game birds such as ptarmigan, grouse, ducks, geese and swans are also increasing rapidly. The acting superintendent of Waterton Lakes Park reports that elk are making their appearance in that district and that moose tracks have also been observed.

There seems no doubt that wild life has discovered for itself that the parks are sanctuaries. Wardens who patrol the outlying districts report that as soon as the hunting season arrives all the wild life they meet is invariably headed in the direction of the park. Ducks and geese sometimes stay several weeks during migrations and one of the wardens in Jasper reports that they are evidently going to make a breeding ground of the marshes in that park.

Despite the great area of the parks, there is very little poaching. This is probably due to the very stringent way in which the regulations have been enforced, but it also indicates that the public soon become educated as to the sanctity of the parks from a wild life standpoint. There is good evidence to show that even the Indians have now become educated with respect to park boundaries, and very few attempted infractions of the regulations have occurred.

We have been very fortunate in developing a game warden service which possesses an enthusiastic love for wild life and the success of the game protection policy is undoubtedly due to their fearless and relentless enforcement of the regulations, as well as to their active pursuit of predatory animals, such as coyotes.

BUFFALO.

The buffalo herds in Buffalo and Elk Island parks continue to thrive and to increase in a most satisfactory manner. There are now about 3,800 in the total herd, and I am advised by the superintendent that the number will have reached 4,000 by the fall. This is an increase of 3,300 in ten years, or almost 500 per cent. The herd is now so large that it seems advisable to consider making some disposal of the surplus males and it is probable that the question of placing a certain number on the market for meat purposes will be considered in the near future.

The cross-breeding experiments being carried on by the director of Experimental Farms at Buffalo Park are producing most interesting results, an account of which will no doubt be published by the Department of Agriculture in due time.

DESTRUCTION OF NOXIOUS ANIMALS.

In Buffalo Park during the past few years coyotes have become a serious menace. They have not only been attacking the bird and animal life in the park itself but were using the park for sanctuary purposes after committing depredations on adjacent farms and settlements. Last year it was decided to make use of trained hounds for the purpose of extermination and about 65 coyotes were destroyed, or nearly three times as many as had been secured by traps during the previous year. This method was therefore continued during the present year and 81 coyotes were killed by the hounds. A gratifying feature is, that of this number, 61 were females. The marked superiority of this method is shown by the fact that only two coyotes were captured in traps during the same period.

In connection with the buffalo herd at Elk Island Park, it is interesting to note that these animals, which were originally of the same stock as those in Buffalo Park are developing under the different environment noticeably different characteristics both structurally and as regards colouration. A veterinary inspector of the Health of Animal Branch reports that their heads are finer and the fore and hind quarters better developed. The skins are also much darker, the long hair on the fore part of the body being black and lustrous. This would seem to indicate that the environment at Elk Island, which affords plenty of shade and possibly more nutritious herbage than that found on the plains, or at Wainwright, is producing a type similar to the wood bison of the far north, whose habitat lies among thick forests. (This may have some bearing if a policy of the commercial disposal of the buffalo is developed.)

PUBLICITY.

Owing to the reduced appropriation the publication of new literature with regard to the National Parks has not been possible. The manuscript for several publications with regard to the fossils, butter flies, moths and other features of the parks have been prepared and are only waiting for the necessary appropriation. It is hoped that their publication will be possible next year as the editions of practically all literature in stock are now almost exhausted.

The most valuable publicity given the parks during the year was that secured through co-operation with the Exhibits and Publicity Branch of the Department of Trade and Commerce, which featured the national parks in its motion pictures and lecture programme. A number of very fine films of the parks were secured by them and sent out through exchanges practically all over the country. These will also appear in the United States and England, France and other European countries as well as in Australia and New Zealand.

The coloured slides, of which the parks' branch now owns a large collection, were almost constantly in demand and a large number of loans were made to church and other organizations. A set of coloured slides was also sent to Dr. McPhail for the use of the Khaki University overseas.

A large number of photographs have been sent out to magazine writers and others and articles and material prepared for the press.

NORTHWEST GAME ACT.

Regulations under the new Act concerning game in the Northwest Territories were passed in May, 1918, and since that time the Mounted Police have been fully instructed in the new law and are enforcing it with gratifying results. The detailed and valuable reports concerning wild life conditions in the Northwest Territories which are received from the Mounted Police are most valuable and officers and men cannot be too highly commended for the attention paid to this matter.

The new regulations and Act provide a modern system of protection for the valuable fur and game resources. Foreigners are prevented from exploiting the north, by a graded license system which serves the purpose of a deterrent to irresponsible parties and at the same time informs the police, who issue the licenses, of the presence and location of all hunters and trappers.

The license fees are merely nominal for bona fide residents of the Territories and no license is required by native-born Indians, Eskimos or resident half-breeds.

Hunting or trapping on Victoria island is forbidden to license holders.

A system of returns showing number of game or fur-bearing animals taken under each license is provided for and it is hoped that these returns will furnish a valuable guide to the status of the important species in any year.

A small revenue is derived from the license fees, and in the fiscal year 1918-19 the returns, incomplete as yet, amounted to $1,202.

During the fiscal year 1918-19, $3,980 was paid in wolf bounties. This amount will doubtless be increased by later returns from the Royal Northwest Mounted Police.

MIGRATORY BIRDS' CONVENTION ACT.

On April 23, 1918, regulations under the Migratory Birds' Convention Act were passed and the Act became operative. From this time steps were taken to acquaint the public with the provisions of the Act, as they applied to the various provinces in Canada.

Work was carried on through the summer by Dr. R. M. Anderson, of the Geological Survey, in the investigation of suggested sanctuaries through the western provinces. This proved a large undertaking and further work may be required before deciding on the most suitable ones for this purpose.

Point Pelee was created a Dominion Park on May 29, 1918. As Point Pelee is a noted resting place for many species of birds during migration, it will prove a valuable bird sanctuary. Many southern forms of bird and plant life occur in this locality which are not found elsewhere in Canada.

Towards the end of 1918 an ornithologist was appointed to assist in the administration of the Migratory Birds' Convention Act and the Northwest Game Act.

A comprehensive publicity campaign has been organized; pamphlets have been prepared and distributed to the press, schools and generally throughout Canada; lectures with motion pictures and coloured lantern slides have been prepared for outsiders, or given by members of the staff. A very successful series of lectures was delivered at the Central Canada Exhibition during the fall of 1918.

The response to our campaign has been excellent. The press have reprinted the published pamphlets very generally in all parts of Canada, and the printing of these articles has served as an impetus to correspondence from the public to the press concerning bird protection.

It was found necessary early in the year to organize a Federal warden service to enforce the Act in the Maritime Provinces. Due publicity was given to the inauguration of this service in the press, and in addition the public was warned by posters that the Federal bird law would be enforced.

In Quebec three bird sanctuaries have been created by the provincial and Dominion Governments, viz.: Bonaventure Island, Perce Rock, and the Great Bird Rocks. These will afford protection to the gannets and other sea birds while they are nesting.

Permits to collect birds for scientific purposes were issued to fifteen ornithologists during the year 1918. The number of permits will be greater during 1919, because the publicity campaign has reached many collectors who did not apply for permits during the first year the regulations were in force.

WILD LIFE CONVENTION.

In February, 1919, an important conference on Wild Life Protection, the first of its kind in Canada, was held under the auspices of the Commission of Conservation and the Advisory Board on Wild Life Protection.

Many important points were discussed and the foundation was laid for better co-operation and understanding between the provinces and between the provincial and Dominion Governments. Several prominent wild life conservationists from the United States addressed the meetings and their presence indicated the spirit of co-operation which was developing between the United States and Canada in wild life protection.

ANTELOPE.

The antelope herd at Foremost, Saskatchewan, is thriving and shows a most satisfactory increase. This is by all odds the most successful effort yet made in Canada to breed antelope in captivity. About three years ago fifty antelope were enclosed and the last count shows about seventy-five.

It is believed that the thriving condition of the herd is due to the fact that the reserve contains all the medicinal plants and mineral deposits required to keep the animals in a healthy condition. Probably these plants and minerals were absent from Buffalo Park and the other reserves where attempts to breed antelope proved unsuccessful.

AGREEMENT WITH BRITISH COLUMBIA.

An important agreement was made during the year between the province of British Columbia and the Dominion. By it the province granted to the Dominion for parks purposes a strip of land ten miles wide, extending from Sinclair Creek in the Columbia Valley eastward to the Alberta boundary, an area of approximately 350,000 acres.

The Province also agreed to a satisfactory adjustment of the many outstanding conflicts of jurisdiction within Dominion Parks in British Columbia. In return the Dominion undertook to complete the construction of the Banff-Windermere auto road, which when finished will provide one of the most spectacular auto roads on the continent. The agreement is published in detail as an appendix to this report.

AGREEMENT WITH ALBERTA.

For some years there have been conflicts of jurisdiction as between the Province of Alberta and the Dominion in regard to parks situated in Alberta. An agreement with Alberta was executed satisfactorily adjusting these conflicts. The agreement is printed as Appendix 12 of this report.

APPENDIX No. 1.

REPORT OF THE SUPERINTENDENT OF ROCKY MOUNTAINS PARK, J. M. WARDLE.

Two or three years ago the prospects of a successful season for the Rocky Mountains Park in the fifth summer of the world-wide war would have been hopelessly discounted. Nevertheless the season of 1918 was far from being an unsuccessful one, and the number of visitors to the most developed of our National Parks speaks well for its attractiveness and popularity. While war's continued demands and conditions prevented many visitors from travelling, the undoubted need for recreation in trying times led many people to the Rocky Mountains Park to rest and gain new life and vigour from her quiet valleys and inspiring peaks.

MOTOR TRAVEL.

The last two years have more than vindicated the decision of the Department to allow automobiles within the park. War conditions, coupled with restrictions on travel by rail and greatly increased passenger rates, brought the number of visitors travelling by rail to a minimum. The number of motorists, however, showed a further increase over last year, and the success of the past season is due entirely to this class of visitor. Without the motor cars, the season, particularly for Banff, might have proved disastrous. As it was, during the summer months the town was continually filled with motoring visitors from all parts of the Prairie Provinces and accommodation was frequently overtaxed. While a large percentage of visiting cars came from Calgary, cars were also noticed from Edmonton, Regina, and adjacent towns—from Winnipeg and from Montana, Minnesota and other states.

The indications are unmistakable that in the future the motorists will comprise the majority of our park visitors. The close of the war will, it is hoped, soon increase the travel by rail to the heights reached in pre-war days, but there will doubtless be a corresponding increase in motor traffic.

During the past year the roads in the park were generally in good condition. Exceptionally dry weather in the early summer resulted in the light materials in the roads west of Banff being badly cut up in sections, but a few days' rain in August assisted in getting these roads into good shape again.

The weather throughout the season was remarkably fine. For some reason motorists show a disinclination to visit the mountains in September or October. These months are, as a rule, the finest of the year in the Rocky Mountains Park. All winged pests are gone, roads are good, the autumn colouring is beautiful, and the crisp pure air combines to give a freshness and enjoyment to motoring only possible in the autumn months.

Rocky Mountains Park suffered comparatively little in the summer freshet of 1918. Bright sunshine in the early spring melted gradually the snows in the tributary valleys of the Bow that usually cause most damage to our roads and bridges. The Bow river itself reached a high stage in the middle of June, causing trouble along the railway lines both east and west of Banff.

Following the war policy laid down for the different departments, no new work was opened up during the year. Necessary maintenance work was undertaken, and considerable improvement was made in the eastern extremity of the motor road between Banff and Kananaskis. This latter work was considerably curtailed through lack of labour, and on that account, although continued nearly a month later than usual, to December 1, was not completed.

AUTOMOBILES.

It is pleasing to note that another increase in motor traffic over previous years was experienced. During the week ends the officials registering the automobiles at the Entrance Arch were very often taxed to keep their work running smoothly and the cars recorded and passed in without undue delay.

During the year the following automobile licenses were issued:—

Private cars	103
Livery cars	60
Transient cars	2,231
Total	2,394

BANFF TOWNSITE.

The work undertaken by the department in the Banff townsite chiefly consisted in keeping in repair the various streets, and the water and sewer services in the town. The surface of Banff avenue was repaired in the fall, and one or two other streets were surfaced with gravel.

CAMP SITE.

The camping grounds, reserved along the Spray river and Golf Links road, were again well patronized. Every week end saw motor cars from various parts of the prairie provinces, laden with camping equipment, en route to the camp site.

Frequent visits by the sanitary inspector and the regular collection of garbage and rubbish kept the camp site clean and attractive in appearance. During the year 57 camping permits were issued, and as there were from three to five persons in the average camping party it is estimated that there was a total of some 230 campers during the season. Several parties stayed for over a month and others remained in camp until the end of October.

FIRE BRIGADE.

The Banff volunteer fire brigade responded to nine calls. All of these were for fires in frame buildings, only one being in the first class fire district. Through the promptness and efficiency of the brigade and with the aid of up-to-date equipment furnished by the department, none of the fires proved serious. The total loss through fires is estimated at $2,800.

ANIMAL ENCLOSURES AND ZOO.

Owing to a large increase in the elk, we were able to turn out 41 of these animals early in the summer to shift for themselves. This was done with some difficulty, as the elk showed a disinclination to leave their quarters. Those turned out were seen occasionally during the summer north of Bankhead and in the vicinity of lake Minnewanka, and during the fall several attempted to break through the fence back into the enclosure.

The dryness of the early summer months resulted in a shortage of pasture in the smaller enclosures and necessitated the enlargement of the goat pasture.

A shelter for the yak was erected in their enclosure in the fall. This building is of suitable design and has sufficient accommodation for some forty or fifty yak.

GOVERNMENT BATHS.

During the summer months the Cave and Basin is one of the most popular resorts in Banff, as is shown by the patronage of a very high percentage of the total number of visitors to the park.

A large percentage of the visitors to the Upper Hot Springs take the baths for their curative properties, and the total number of visitors for the past year was very gratifying.

VISITORS.

Among the early visitors to Banff and the park were the International Fishery Commission, headed by Mr. W. A. Found. The commission spent one day in Banff, in May, and were extended the courtesies of the park.

Major-General Sir Louis Jackson visited Banff towards the end of June and expressed himself delighted with the different drives and various points of interest.

In September Baron Shaughnessy spent two days in Banff, being a patron of the Golf Links during his visit.

In October, Prince Fushimi of Japan, who represented Japan in several international conferences, with his staff spent half a day in Banff, and was an interested visitor to the museum, zoo, and buffalo paddock.

Early in August, Banff was honoured by an informal visit from Prince Arthur of Connaught. Escort was provided for him by the Royal Northwest Mounted Police, some additional men being brought up from Calgary to augment the local detachment.

Prince Arthur visited all the points of interest in Banff and the vicinity, and also played several rounds on the golf links.

Sixty-eight grazing permits were issued during the year and covered the grazing of 138 horses and 212 cows.

CANMORE.

A much needed protection to the Canmore townsite from the Bow river was afforded by the construction of a timber river-wall, backfilled with rock, along the north bank of the Bow adjacent to the townsite. The former row of piles protecting the river bank at this point was badly weakened through decay and had given away at several points.

The main street of Canmore was improved during the summer by removing the stones and boulders.

LAKE LOUISE.

The great advantage of being connected to outer points by motor roads was emphasized by the quiet season at Lake Louise as compared with that at Banff. The former is entirely dependent for a successful season, on tourists travelling by rail, and various war conditions and restrictions combined to reduce the number of visitors to this attractive spot.

The Moraine Lake drive was again deservedly popular, a regular automobile service to the lake being operated by a transport company.

During the busy season a camp was maintained at the lake for the benefit of tourists and others wishing to spend a few days there, or to make it their headquarters for fishing and other trips.

During the season a new tea house was opened on the summit of the big "Beehive Mountain," at an altitude of 7,430 feet. This is one of the highest refreshment stands in America, being 550 feet above the tea room at lake Agnes. The east windows overlook a sheer drop of 780 feet to Mirror lake, while the southern exposure overlooks a greater though less precipitous drop of 1,760 feet to lake Louise. The "Beehive" tea room is reached by a continuation of the trail to lake Agnes.

HEALTH.

In common with other points of the American continent, the Rocky Mountains park was visited in the fall and winter of 1918-19 by the world-wide epidemic of influ-

enza. Fortunately the clear dry air and the healthy surroundings combined to greatly reduce the severity of the attacks. The mortality was also considerably below the average percentage for the rest of the country. From the figures obtained from the medical officer for the park, the mortality was only 3·3 per hundred cases.

MOUNTED POLICE.

During the greater part of 1917, civil and criminal law in the park has been administered by the provincial authorities. The past year saw the re-establishment of the Royal Northwest Mounted Police in the park, for the maintenance of order and the enforcing of the various park regulations. The Banff detachment assumed their duties early in June.

APPENDIX 1a.

NATIONALITIES OF VISITORS TO ROCKY MOUNTAINS PARK FROM APRIL 1, 1918, TO MARCH 31, 1919.

VISITORS REGISTERED AT THE CAVE AND BASIN.

Canada	11,964
United States	5,091
England	192
Scotland	158
Ireland	42
Wales	13
Australia	319
New Zealand	149
Tasmania	28
India	34
Holland	4
France	18
China	13
Malay States	5
Straits Settlements	21
Phillipine Islands	7
South Africa	3
British West Indies	11
Portugal	4
Japan	37
Korea	15
South Sea Islands	5
Hawaian	5
Total	18,138
Paying bathers	31,662
Bathers with passes	576
	32,238

NUMBER OF BATHERS AT UPPER HOT SPRINGS, April 1, 1918, to March 31, 1919.

Canada	24,346
United States	240
England	56
Scotland	26
Ireland	10
Italy	8
Australia	12
Total	24,698

Total number of bathers at Cave and Basin and Upper Hot Springs, 56,936.

GUESTS VISITING BANFF SPRINGS HOTEL, Season 1919, May 15 to September 30.

Canada.	
Alberta	2,462
British Columbia	302
Manitoba	658
New Brunswick	11
Nova Scotia	15
Ontario	586
Quebec	210
Saskatchewan	290
Prince Edward Island	2
United States.	
Alabama	2
Arizona	....
Arkansas	1
California	234
Connecticut	19
Colorado	2
Delaware	9
District of Columbia	33
Florida	2
Georgia	12
Illinois	252
Idaho	3
Indiana	26
Iowa	33
Kansas	19
Kentucky	2
Louisiana	9
Maine	13
Minnesota	114
Mississippi	6
Missouri	81
Montana	31
Massachusetts	105
Maryland	23
Michigan	66
New York	421
New Jersey	37
New Hampshire	4
North Carolina	3
Nevada	4
North Dakota	10
Nebraska	18
New Mexico	3
Ohio	91
Oklahoma	18

GUESTS VISITING BANFF SPRINGS HOTEL, Season 1919, May 15 to September 30.—*Concluded.*

United States—Concluded.

Oregon	27
Pennsylvania	123
Rhode Island	20
South Carolina	2
South Dakota	1
Texas	13
Tennessee	7
Utah	1
Virginia	2
Vermont	17
Washington	85
Wisconsin	45
West Virginia	2
Wyoming	....

Foreign countries.

Alaska	10
Australia	142
Africa	1
Borneo	3
British Guiana	2
Burma	3
China	23
Ceylon	3
Egypt	1
England	60
France	4
Fiji Islands	2
Hawaii	7
Honolulu	18
India	1
Japan	24
Jamaica	2
Java	1
Manila	....
Mexico	1
Malay Straits	2
New Zealand	14
Newfoundland	4
Portugal	3
Roumania	1
Scotland	6
Siam	2
Sweden	12
Switzerland	1
Tasmania	....
Total	6,939

STATEMENT OF PERSONS REGISTERED AT CHATEAU LAKE LOUISE, LAKE LOUISE, ALTA.—Season 1918.

	1918.	1917.
Manitoba	17	39
(Winnipeg)	205	203
Saskatchewan	169	319
Alberta	471	721
British Columbia	149	158
Total	1,011	1,440
Decrease	429	

STATEMENT OF PERSONS REGISTERED AT CHATEAU LAKE LOUISE, LAKE LOUISE, ALTA.—Season 1918—*Con.*

	1918.	1917.
Prince Edward Island	1	3
Newfoundland	2	....
Nova Scotia	6	17
New Brunswick	15	23
Quebec	110	122
Ontario	340	417
Total	474	582
Decrease	108	

Maine	5	22
New Hampshire	10	4
Vermont	4	13
Massachusetts	82	184
(Boston)	71	192
Connecticut	29	87
Rhode Island	14	42
New York State	91	235
(New York City)	336	908
Pennsylvania	50	92
(Pittsburg)	37	91
(Philadelphia)	82	202
New Jersey	68	183
Delaware	10	4
Maryland	22	34
District of Columbia	34	51
West Virginia	7	23
Virginia	5	25
Total	959	2,393
Decrease	1,434	

Kentucky	6	36
Tennessee	9	34
North Carolina	2	10
South Carolina	4	2
Georgia	12	33
Alabama	....	27
Mississippi	2	7
Louisiana	18	35
Florida	4	10
Total	57	194
Decrease	137	

Ohio	76	200
(Cleveland)	35	75
(Cincinnati)	16	63
Michigan	114	51
(Detroit)	73	45
Indiana	40	62
(Indianapolis)	15	32
Illinois	53	223
Chicago	202	623
Iowa	61	181
Total	685	1,646
Decrease	961	

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STATEMENT OF PERSONS REGISTERED AT CHATEAU LAKE LOUISE, LAKE LOUISE, ALTA.—Season 1918—*Con.*

	1918.	1917.
Missouri	20	42
(St. Louis)	50	88
(Kansas City)	24	75
Kansas	17	40
Arkansas	3	11
Oklahoma	20	39
Nebraska	15	49
(Omaha)	12	38
Texas	4	79
Total	165	461
Decrease	296	
Wisconsin	49	96
(Milwaukee)	22	60
Minnesota	23	50
Minneapolis)	91	222
(St. Paul)	34	54
North Dakota	9	43
South Dakota	9	10
Total	237	535
Decrease	298	
Washington	183	208
Oregon	65	123
California	103	466
(San Francisco)	107	276
(Los Angeles)	60	243
Nevada	6	8
Total	524	1,324
Decrease	800	
Montana	12	6
Idaho	1	10
Wyoming	....	1
Colorado	2	16
Utah	2	....
Arizona	....	6
Total	17	49
Decrease	32	
West Indies	4	5
Mexico and Central America	1	1
South America	4	4
Total	9	10
Decrease	1	
England	40	34
Ireland	....	2
Scotland	3	3
France	1	2
Holland	....	65
Other European countries	12	14
Total	56	120
Decrease	64	

STATEMENT OF PERSONS REGISTERED AT CHATEAU LAKE LOUISE, LAKE LOUISE, ALTA.—Season 1918—*Con.*

	1918.	1917.
Australia	90	66
New Zealand	20	50
China	41	60
India	14	11
Hawaii	15	35
Phillipine Islands	2	12
Africa	3	7
Japan	18	17
Straits Settlements	4	10
Total	207	268
Decrease	61	

CONDUCTED PARTIES (otherwise unallocated).

	1918.	1917.
Raymond & Whitcomb	....	10
G. K. & B.	....	52
Various	13	20
Total	13	82
Decrease	69	
Unallocated	41	61
Total	4,454	9,155
Decrease	4,701	

KING EDWARD HOTEL (open all year).

Canada	4,594
United States	334
England	45
Scotland	4
Australia	82
New Zealand	6
India	2
France	3
Holland	4
Norway	1
Japan	2
China	8
	5,085

HOMESTEAD HOTEL (open May 4 to Sept. 29).

Canada	2,090
United States	80
South Africa	7
France	2
	2,179

24,420 meals were served at this hotel.

MOUNT ROYAL HOTEL (open May 15 to Oct. 15).

Canada	2,815
United States	250
England	5
Australia	7
New Zealand	2
Other countries	15
	3,094

ALBERTA HOTEL (open April 1 to Nov. 13).

Canada	1,900
United States	20
Other countries	5
	1,925

UPPER HOT SPRINGS HOTEL (open all year).

Canada	620
United States	18
Other countries	4
	642

SUMMARY.

Banff Springs Hotel	6,940
Chateau Lake Louise	4,454
King Edward Hotel	5,085
Mount Royal Hotel	3,094
Homestead Hotel	2,179
Alberta Hotel	1,925
Upper Hot Springs Hotel	642
Summer cottagers and campers	6,000
Motorists	11,500
	41,819

APPENDIX 1b.

REPORT OF THE CURATOR OF BANFF MUSEUM, N. B. SANSON.

Several trips were made for the purpose of exploring and collecting specimens for the museum. Interesting photographs were taken of animal and vegetable life and also of mountain scenery, which are to be placed on exhibition. Collections of insects, spiders, birds, fossils and plants were made in different localities in the park.

A specimen of Hepialus (Hyperhoreus), very rare, was collected. There are only three of these specimens in the world, one in the United States and one in the collection of Mr. Bowman, of Edmonton.

Some time was spent in searching for Gryloblatta, but only one adult and three immature specimens were secured on Sulphur mountain.

BIRDS.

White winged crossbills have been seen about now and again this winter. The red plumage of the male is unusually beautiful.

Clarke's nutcrackers are still less numerous than usual and the Canada jay is seldom seen now about Banff.

Thousands of Vanessa Californica (the California tortoise shell) appeared about Banff. This is thought to have been due to the unusually fine weather during the summer.

Wild and cultivated plants were blooming in October last year owing to the exceptionally fine autumn.

GENERAL INFORMATION WITH REGARD TO WEATHER CONDITIONS AT BANFF.

The weather for the year ending March 31, 1919, showed some marked exceptions to all previous records. November and December, 1918, and January 1919, were comparatively mild months. In November the temperatures of zero and below occurred twice. In December temperatures of zero and below occurred five times. In January temperatures of zero and below occurred twice. Part of February and March were

cold; in February temperatures of zero and below occurred sixteen times and in March thirteen times. At the end of March there was much more snow on the ground than usual, but sleighing did not start till December 3, continuing until April. The snowfall for this year was about the average, being six feet nine inches to the end of March. The first snowfalls fell on a dry ground before frost had penetrated the ground to any extent. At the end of March there was about four feet of snow near the top of Sulphur mountain, or an average of about two and one-half feet over all the mountain on the level.

The weather of two of the months of the year was specially noticeable. In July, three inches of snow fell, the first reported snow for July since this station was organized.

The following notes with regard to September, a lovely month, may prove of interest:—

Mean temperature 51·8, maximum temperature 78·4, minimum temperature 27·9. There were fifteen temperatures of 70 degrees and over, and only eight temperatures of 32 degrees and lower. Only five days with rain, and no snow, twelve perfect days and seven very fine days. This was the finest September on record.

APPENDIX No. 1c.

THE ALPINE CLUB OF CANADA.

(Report prepared by the Club.)

The Alpine Club House was open during June, July, August, and September, to members and their friends. In common with other features of the national parks it received less patronage than usual owing to war conditions and the exceedingly high railway rates. However, it served to bring the mountain regions of Canada to the consideration of many who needed information. The officials are always ready to help with such knowledge as they possess, any who come, and realize perhaps most of all how much a local guide is needed in Banff thoroughly conversant with and interested in its many attractions. Hotel clerks who spend their brief season in the mountains in hotel corridors cannot know these things however obliging they may be.

Besides the somewhat interesting ascents of Rundle and Cascade, Mount Norquay was several times climbed and declared the most interesting of the moderately difficult climbs in the neighbourhood. The favourite route started directly from the motor road to Castle mountain.

The Bow river becomes more appreciated every year as the trips along the Spray and through the gap to Canmore and round Sulphur mountain coming down into Sundance valley are better known.

It appears to the authorities of the Alpine Club that steady employment could be found for one or even two competent guides stationed at the village of Banff during the summer months. There are many climbs and expeditions of very great interest in the immediate vicinity and an important percentage of the visitors would be glad to make these if suitable guides were available.

For climbs, Mounts Cascade, Rundle, Norquay, Edith, Louis, Aylmer, Inglismaldie, Peechee and Sulphur may be mentioned. For expeditions there are several round trips such as Edith pass, Mystic lake, Johnston creek and canyon, Spray river trail, Canmore gap and home by railway; Sundance canyon, across Sulphur mountain and home by Spray river road. The foregoing may be mentioned as examples,

but there are a number of others, all of interest, but needing a competent guide. They can readily be accomplished without the expense of a pack train.

Such guides need not necessarily be Swiss guides. Competent Canadian guides can readily be found. They should be in the employ of the Government and their services be made available from the office of the superintendent.

A word about bears: Owing to the park regulations prohibiting the use of firearms and the running of dogs at large, wild life in the park becomes a feature. Deer walk the streets and feed at the kitchen doors. Bear while not familiar, frequent the outskirts of the village and during the past season did considerable damage at the Alpine Club House, twice entering the pantry and carrying off food, and once breaking a large plate glass window in the assembly room. While it is admitted by those who know well that the brown bear is not absolutely dangerous if left severely alone, still it is not possible to convince strangers that such is the case and the ravages of these animals are a constant fear to our guests and employees when walking the less frequented roads and gathering flowers in the woodland surroundings. Apart from that, it seems that the expense of the damage they do, which has been considerable at the club house during the past few years, has to be borne by the club and it is thought that more adequate protection should be given. Come upon suddenly, or with their young, bears cannot be counted upon to run away and there is always the possibility of a tragedy.

In conclusion it would not be amiss to say a few words concerning the winter sports at Banff. For the past three years the residents of Banff with a true sportsmanlike spirit have organized and carried out successfully a winter carnival of sports. Through the good management and hard work of those placed in charge the sports have been made to pay expenses and a goodly attendance has been present throughout the period they were in operation. As a rule the weather is ideal and particularly so during the last carnival when bright blue skies, fleecy white clouds and brilliant sunshine made the wonderful surroundings of snow-clad peaks veritable fairyland.

Skating, snowshoeing, ski-ing, curling and hockey on the ice were the order of the day and of the night; and the atmosphere, climate conditions and general feeling of glorious exhilaration induced by the bright warm winter days at this high altitude could not have been surpassed by the most famuos winter resorts of the European Alps.

In addition, the swimming contests in the magnificent Government bathing pools, the annual meet of the gun club, the nightly dances and masquerade balls and the moving pictures of winter sports and other subjects supplied continuous attractions; whilst a handsome ice palace brilliantly illuminated at night provided a centre of attraction.

But it needs more than the efforts of the villagers to make the most of the grand opportunities nature has given to Banff in this respect. The mountain parks, and particularly the Rocky Mountains park, are the property of the Canadian people and are for their benefit first of all. It is therefore appropriate that the Canadian Government and the great corporation of the Canadian Pacific railway should lend all possible assistance to make the very best of this grand natural asset. Further, it is for the people of Canada to lend their assistance to such splendid features of the mountains that belong to them by participating in the sports, and it is here the railway corporation can best lend assistance by providing rates of travel that will place such wonderful opportunities within reach of the public.

The Alpine Club from the first has clearly heard the call and has participated to the extent of its ability in collaborating with the residents of Banff. It has in each year had its director there as a representative and a number of members have been present. It has also during the past two years presented a handsome silver cup to be competed for by the ladies hockey teams, and will continue to so participate in the future.

The club wishes in this connection to express a note of appreciation for the good work done by the superintendent of the park who is evidently a good sportsman and who seems to realize the great possibilities that are presented by the beginning of winter sports in the Canadian Rockies as a valuable asset of the present and a still greater one for the future.

APPENDIX No. 1 (d).

REPORT OF THE THIRTEENTH ANNUAL CAMP OF THE ALPINE CLUB OF CANADA IN PARADISE VALLEY, 1918.

The thirteenth Annual Camp of the Alpine Club of Canada was held in Paradise valley, on the site of the 1907 camp, from July 15 to July 31. The attendance was smaller than usual owing to war conditions and the high cost of travel.

The situation was a charming one, under the shadow of Mt. Temple, with a fine view of the north wall of Hungabee. At once the visitor realized he was in the heart of the big mountains, the true Rockies of Canada. In connection, an outlying camp was pitched in Consolation valley, a most lovely site.

The weather was truly accommodating. One day a heavy snow storm rendered climbing impossible, but the snow had nearly all disappeared at night. In 1907 Temple and Aberdeen were considered serious climbs. In 1919 they were looked upon as good enough for training, but not the real thing. Mt. Pinnacle and The Mitre were ascended by quite a few parties and one traverse was made up the steep wall from the valley over Ringrose and down to lake O'Hara. Various expeditions were made in the delightful neighbourhood which are well known. One, however, which is new and by no means strenuous, was found to be well worth while. Between Westach pass and Hungabee rises a dome-shaped mountain, slightly under 10,000 feet in altitude, which is easily climbed from the summit of the pass. It is the key to many valleys and commands a superb view.

One of the club members, Mr. V. A. Fynn, made many original variants of familiar climbs from Lake Louise during the season and repaired and equipped at his own expense the hut in the O'Hara meadow. Were the club in a stronger financial position it would do much on such lines to make the mountains more readily available to the people of Canada and other nations.

From the annual meeting a resolution of sympathy and appreciation was sent to the club members on war service, and another of congratulation to its released prisoners.

Two Swiss guides, loaned to the club by the chief of the hotel service of the Canadian Pacific Railway, were in attendance at the camp while in session. Edward Feuz and Christian Hasler have long been friends of the club and its members, and, as always, gave their very best professional services to make the climbing programme a complete success.

There were present members of the English, Swiss and American Alpine Clubs, of the Appalachian Mountain Club and of the Royal Geographical Society.

APPENDIX No. 2.

REPORT OF THE SUPERINTENDENT OF YOHO PARK, E. N. RUSSELL.

The past year, in spite of the many disadvantageous conditions due to the war, has been a very satisfactory one. Although appropriations were small, labour scarce, and there was a great deal of work to be done to keep the parks up to the standard of their reputation, it was possible to complete the programme of work for the year as laid out, and while there has been no great progress in the way of new development work, all existing roads, trails, buildings and other works have been adequately kept up and are ready for the thousands of tourists who will no doubt wish to visit the parks now that the war is over.

WORK OF THE YEAR.

In addition to the usual spring work in connection with the cleaning-up of the townsite of Field, repairing sidewalks and streets, etc., the first work undertaken was the raising and strengthening of the bridge over the Kiekinghorse river at Field and the protection work on the creek at the back of the townsite.

The Kiekinghorse bridge, a structure about 300 feet in length, was raised about 2 feet for its entire length. This had been rendered necessary by the filling in of the bed of the river, which at this point had recently been built up about 18 inches by deposits of sediment and gravel. The piers were then built up and the two main trusses strengthened. A small spur rock dam was also constructed above the bridge for the purpose of throwing the water over into the main channel again and thus assisting in cutting out the material deposited there.

The protection work on the creek consisted of the building of a log, rock-filled crib, 250 feet in length along the bank of the creek, the throwing up of a gravel embankment for about the same distance and the strengthening of the bank at other points. This work was necessary to protect the townsite from the danger of the creek overflooding its banks. Later on in the season a small truss bridge, 40 feet in length, was erected over the creek on the road from the town to the cemetery.

ROADS.

The repair and maintenance work necessary in connection with roads was not so heavy as usual, due largely to the decreased traffic. The Yoho road required the most attention, about 35 feet of road bed at one spot in the canyon having been completely carried away. Considerable trouble was also experienced about a mile from Field by the flooding of the Kiekinghorse river. The latter piece of road was eliminated later in the season by building a diversion along the side hill on higher ground.

Minor repairs were effected on several of the other roads, but only those of an urgent nature were undertaken, as labour was very scarce. For this reason it was found impossible to place sectionmen on the Emerald Lake road as usual and only on the Yoho road for a very short period.

TRAILS.

On the Leanehoil trail two new diversions were built in order to avoid the low lying ground in the Kiekinghorse valley in which we have experienced considerable trouble on account of high water.

On the Ottertail trail we were unfortunate in losing two bridges over Ottertail creek which were carried away by the high water. Both of these, however, had served their time being over 20 years old. Instead of replacing both these bridges it was decided it would be better to construct a trail up the west bank of the river to the site of the upper crossing and thus eliminate the lower bridge, it having been found impracticable to build the trail along the east bank for the entire distance. This scheme was later satisfactorily carried out.

TELEPHONE LINES.

No new lines were built but the whole of the Field-Ottertail line was taken down and re-strung so as to conform with the regulations of the Canadian Pacific Railway Company on whose poles the line is hung. This also had to be done on the greater portion of the Leanchoil-Deer Lodge line, the company's regulations calling for all solid insulators, in place of the split tree insulators which we use.

FIRE AND GAME PROTECTION.

Valuable work was done by the warden service throughout the season. Over 166 miles of trails were cleaned out, maintained and patrolled in addition to their other duties. No fires of any consequence occurred although the weather for part of the season was very dry and the fire hazard great. The systematic campaign inaugurated by the branch for the purpose of educating the public as to the danger of carelessness with regard to fire in the forest was energetically carried on with all the means at our disposal. The results of this campaign are easily discernible in a more careful use of fire in all its forms on the part of the public frequenting the park.

FISHING.

About 2,000 ouananiche or land-locked salmon fry, were placed in Sherbrooke lake during the season. This lake was chosen for their experimental planting because the Department of the Naval Service particularly desired that a body of water should be selected which was not readily accessible from any hotel or to tourists, and this lake was considered in all respects most suitable.

TOURIST TRAVEL.

As was to be expected tourist travel was unusually small. Now that brighter days are coming, however, it is hoped that the traffic will soon exceed that of the pre-war days and that everything possible will be done to promote what is now recognized to be one of the important revenue producing resources of the Dominion. Probably nothing would tend more to the development of Yoho park than the completion of the main highway, now under construction, between Banff and Field. This would throw open all the beautiful drives in the park to the people of the Prairie Provinces by a direct motor road, and would no doubt result in Field becoming a most popular week-end resort.

HOTELS.

Since the last report the Canadian Pacific Railway Company have turned over the Mount Stephen House at Field to the railway organization of the Y.M.C.A. It is understood, however, that the company intend to erect a more modern hotel at a site to be determined on, which will be farther from the railway line than the present building. In the meantime, it is understood rooms and meals will be available for the tourist in the old building under the management of the Y.M.C.A.

APPENDIX No. 3.

REPORT OF THE SUPERINTENDENT OF GLACIER PARK, E. N. RUSSELL.

As is usual in this park, it was not until the month of June that a start could be made on the general work of the season. The snowfall for the winter 1917-18 was exceptionally heavy, our warden at Glacier recording a total of over 50 feet. As practically no melting takes place, such a heavy fall naturally requires a long time to melt and high water is generally upon us before the snow is all gone. As is to be expected there are always numerous snow slides which bring down large quantities of rock and débris which do considerable damage to the roads, trails and bridges.

As soon as the snow was sufficiently melted, an attempt was made to renew the bridges over Beaver river and Grizzly creek, on the Beaver River trail, but the work had to be abandoned for the time being, owing to a sudden rise in the water. The men were therefore moved over to Glacier and the repairs necessary on the road to the Nakimu caves were carried out.

The trails were for the most part cleared out by the wardens except in the case of the Baloo pass and Glacier trails, on which extra assistance was required.

Work on the Beaver River trail was resumed in September, after the flood waters had subsided, and the services of some exceptionally good men were secured, including three of the celebrated Swiss guides. The Bear Creek bridge which had been undermined at one end, was first raised and generally repaired, and then the construction of a new bridge over Beaver river was proceeded with. As the main span on this crossing was over 90 feet in length, the cantilever type of bridge was used and an excellent job made of the whole structure. All bridges in this country have of course to be able to stand enormous strains in order to bear the weight of the winter snows, but this bridge, as constructed, should be able to stand all that will be demanded of it. Its total length is 144 feet.

At the Nakimu caves a considerable amount of development work was done by the caretaker and discoverer, Mr. C. H. Deutschman. Although unable to secure the services of an efficient helper, Mr. Deutschman started in on the work single-handed, and made such progress that by the end of the season he had completed 111 feet of concrete stairway and 67 feet of concrete walk, as well as a number of smaller works, all of which will tend to make the caves more accessible to the public.

Only a few minor fires occurred during the year and these were easily suppressed and no damage to either timber or property resulted.

APPENDIX No. 4.

REPORT OF THE SUPERINTENDENT OF REVELSTOKE PARK.

E. N. Russell, Acting Superintendent.

The appropriation allotted to Revelstoke park was materially reduced this year and was only sufficient to cover safeguarding the park from forest fires and the actual repairs and maintenance of roads and trails already in existence. It was therefore not possible to do any further work on the automobile road to the summit of the mountain. This road, the construction of which is nearly completed, is one of the main

features of the park. Commencing in the city of Revelstoke, it follows the Columbia valley for a short distance northward and then abruptly begins the ascent. At no point on the road does the grade exceed 7·6 per cent, while the average is considerably lower and at every turn a wonderful panoramic view of magnificent scenery is presented until finally the summit of mount Revelstoke is reached at an elevation of nearly 7,000 feet. Here the traveller finds himself on a beautiful park-like plateau with groves of balsams, flower-carpeted meadows, mountain tarns or glacial lakes offering many varieties of scenery.

The principal difficulty in the maintenance of this road is the prevention of washouts caused by the thawing of the heavy snows. From the time when the snow begins to melt on the lower levels until it disappears from the summit about six weeks later, the road requires constant attention. New watercourses are formed each year which must be diverted into adequate culverts or great damage is liable to result to the road bed. As a result of the close watch kept on the road during the season, however, the cost of actual repairs this year was slight.

During the early summer, His Royal Highness, Prince Arthur of Connaught, passed through the mountains and held his train in Revelstoke for the express purpose of taking the drive up mount Revelstoke. I availed myself of the opportunity to ask him if he would be good enough to plant a post in commemoration of his visit, similar to that erected by his father when Governor General of Canada, and he was kind enough to consent. The new post was planted at station 635.

TRAILS.

The mount Revelstoke trail from Revelstoke to the summit of the mountain was repaired under the direction of the fire warden. This trail affords a much shorter route for pedestrians than the motor road and is very largely used.

FIRE PROTECTION.

Two fires occurred in the park during the year. The first was started by a settler living outside the park boundaries, who, while burning slashing, inadvertently let the fire get beyond his control with the result that it spread into the park. Some 160 acres were touched or burned over but as it was all second growth timber the damage was not great. The second fire was started by lightning on the summit but was fortunately discovered and extinguished by a party of engineers who were camped nearby before any material damage had resulted.

A new warden's cabin should be erected on the summit, also a small stable for the warden's horse. This cabin should be connected by telephone with the city of Revelstoke by an extension of our present line so that if the warden from this vantage point should observe a fire anywhere in the vicinity he would be able to summon help at once.

RECREATION.

The Revelstoke Ski Club held its annual sports in the park as usual. These were attended with great success. Jumping contests were held for the first time on the improved grounds and the big jump, which is now considered one of the finest in Canada, met with much praise.

GAME.

Game within the park is on the increase. Large numbers of several species of grouse can be observed at any time on the mountain sides, while bear, deer and goat are frequently seen.

APPENDIX No 5.

REPORT OF THE SUPERINTENDENT OF JASPER PARK.

R. S. Stronach, Acting Superintendent.

Owing to the necessity of curtailing all government expenditure on account of the war, no work was undertaken in this park during the past fiscal year beyond what was absolutely essential.

FIRE AND GAME SERVICE.

The number of wardens employed in the park has been increased from 12 to 14. This is still a very small number considering the large area of the park, 4,400 square miles, and it is hoped additional men may be added to the staff during the coming year. The policy followed in engaging wardens has been to appoint returned soldiers when possible, and it was fortunately possible to secure suitable returned men for all vacancies which occurred during the past year.

FIRES.

No serious fires occurred in the park, although we had an unusually dry summer. Nineteen small fires were started but owing to the precautions taken by the wardens, assisted by the co-operation of the railway officials, no serious damage was done. The total expenditure for fire fighting incurred by the department was only $410.89.

GAME.

The number of wild animals in the park shows a considerable increase and owing to the strict protection afforded they are becoming extremely tame. Deer are sometimes seen walking through townsites and sheep are also very tame. There is a flock of the latter which can be seen at almost any time about two miles west of Pocahontas along the railway line. Beaver are also very numerous and tame, and tourists take a great deal of interest in watching them at work.

Owing to the active campaign undertaken by the wardens, the number of predatory animals in the park has been considerably decreased. The large number of coyotes destroyed is particularly gratifying as they were formerly a serious menace to the deer.

FISHING.

Caledonia lake continued to prove an excellent fishing ground and sportsmen had little difficulty in securing fifteen—the number permitted to be taken in one day. Jack lake is also famous for the size and number of its fish, but its distance from Jasper makes it less frequented. Numerous other and more accessible lakes also provide good sport.

Last August 84,000 fry were received from the hatchery at Banff and placed in three lakes, it having been found that the 34,000 fry and fingerlings with which several lakes had been stocked in November, 1917, were thriving and in excellent condition, The lakes now stocked are Pyramid, Patricia, Beau Vert, Annette, and Edith, the fry being land-locked salmon, Atlantic salmon and cut-throat trout.

ROADS AND TRAILS.

No new roads were constructed during the year but the existing roads were kept in good condition to meet the needs of the tourist traffic.

The trail from Jasper to Caledonia lake was completed and small diversions to existing trails made. I would point out that for some time the future of this park will depend largely on trails and it is hoped considerable new development work will be possible in the near future.

ROYAL NORTHWEST MOUNTED POLICE.

The number of Royal Northwest Mounted Police stationed within the park has been increased to three, a non-commissioned officer now being permanently placed at Jasper, Brule and Pocahontas.

PUBLIC HEALTH.

The prevailing epidemic of Spanish influenza which swept the country also reached Jasper Park, but owing to the extremely healthy conditions and the precautions taken by the authorities, the number of deaths was extremely low.

MIETTE SULPHUR SPRINGS.

The Miette sulphur springs, about 12 miles from Pocahontas, can compare with any of a similar kind in Canada. Unfortunately, it has not yet been possible to develop these springs as had been hoped. Notwithstanding the fact that patients anxious to take the treatment have to live in tents and pack in all their supplies by ponies, there was an average of 25 people staying at the springs all summer and numerous cures were affected. One case worthy of mention was a man who was unable to walk when he commenced taking the treatment, but who in a couple of weeks was able to cover on foot the 12 miles of trail between the springs and Pocahontas. He stated that he had suffered from rheumatism for a number of years without being able to get any relief, but after a month's stay he was able to return home apparently entirely cured.

APPENDIX No. 6.

REPORT OF THE SUPERINTENDENT OF WATERTON LAKES PARK, R. COOPER.

Waterton Lakes park last year had the most successful tourist season in its history. Approximately 9,000 visitors entered the park. Practically all the travel was by motor-cars, most of which came from Southern Alberta towns, and the fine weather and good condition of the provincial highways leading to the park helped to make this a record season.

WORK OF THE YEAR.

Roads.—The main automobile road entering the park from Cardston and Lethbridge was widened, graded, gravelled and surfaced for a distance of 1½ miles from Station 23. A number of improvements were also made to the remainder of the road and it is now in excellent condition.

Bridges.—A new trestle bridge was erected over Pass creek on the main road to Oil City and Flat Head, British Columbia. This bridge will be a great convenience to park visitors motoring to Wall lake. The bridge on the main road entering the park over Pass creek was repaired and piers repropped to prevent further washing and undermining.

FIRE AND GAME PROTECTION.

Big game is becoming more plentiful each year and numbers of sheep and deer are often seen in the townsite. The herd of wild elk which ranges up Castle river are increasing very rapidly; elk have been seen up Pass creek and around the lakes, and it seems probable that they will eventually be found scattered through the park, as the sheep, deer and goats now are.

There was one infringement of the park regulations with regard to the killing of deer. The guilty party was fined $50, with costs, and the head and carcass confiscated. Other minor infringements were reported and convictions secured.

Two new warden's cabins were erected during the year, one at the international boundary, on the west shore of the lake, and the other on Pass creek. A warden's headquarters cabin is also under erection at Yarrow creek.

TELEPHONE.

The telephone line which extends from the Belly river west and north to Yarrow creek, a distance of 35 miles, connecting with the chief warden's and Waterton bridge cabins and the superintendent's office, has proved a great convenience. There is at present no outside telephone connection, but it is hoped the Provincial Government will in the near future extend the Pincher creek line to the park. This would be a great convenience in the administration of park business.

RECREATION.

Two of the chief attractions at Waterton Lakes park are boating and fishing. Last season, as usual, excellent catches of Dolly Varden and Cuthroat trout were reported. Two new passenger launches were placed on the lakes to handle the increasing passenger traffic. Mr. Hansen also operated his boat and his register shows that he carried 1,500 people to the head of the lakes during the season.

BUILDING.

Several new cottages were erected, all of a good type. A garage was also opened which will accommodate 50 cars. As practically all the suitable residential lots had been built upon, an addition to the townsite was surveyed last fall, and when this is completed it will be possible to accommodate all who wish to erect cottages with building lots.

APPENDIX No. 7.

REPORT OF THE SUPERINTENDENT OF BUFFALO PARK, A. G. SMITH.

FARMING OPERATIONS.

We began work on the land early in April and by the 20th of May we had our crop in, which consisted of 450 acres seeded to oats. In June 200 acres of land which had produced the second crop were summer-fallowed; this was gone over a couple of times with the harrows during the summer and was left in splendid condition for seeding in the spring. Owing to the frost in July we were obliged to cut 300 acres of our crop for green feed, and from the balance we threshed 1,400 bushels, which was just about equivalent to the amount of seed used.

HAYING.

The dry season was favourable for haying operations on the Ribstone meadow, and we succeeded in putting up about 500 tons. The quality of this hay was much better than the previous year, as there was less old bottom in it. There were also 475 tons of upland hay put up out on the summer range; part of this was for the horses at the north end and animals in the home paddock enclosure, and the balance, about 300 tons, will be baled to be shipped to other Dominion Parks.

A portable engine and hay-baler were purchased for baling hay, but did not reach us until mid-winter. We had, however, succeeded in baling and shipping 200 tons to the other parks before the end of the year.

Settlers living in the vicinity of the park, who were short of feed, were greatly assisted by the granting of hay permits. In all 32 permits were issued, covering the cutting of 800 tons on the reserve.

FIRE-GUARDING.

The fire-guards around the outside of the park, as well as the cross-guards, were either ploughed or disked, the work being done with our own teams.

We had one fire on the reserve which nearly proved disastrous, but fortunately we succeeded, after a couple of days' fighting, in putting it out. This fire came from the east; it burned over those sections east of the Ribstone creek and we were driven back in our fight until we reached the green timber bordering the creek. Had it crossed the creek all the hay on the meadows would have been lost, and perhaps a great deal more, as it was travelling in the direction of the farm buildings.

There were numerous other fires on every side of the park, but I am glad to say we suffered no loss from any of them.

FENCING.

Building and repairing fences was a large item of expenditure at this park during the year. With the exception of a few miles on the south boundary, we completely circled the park repairing the main fence, putting in a large number of new posts. A new fence, completely surrounding the Ribstone meadow, was erected; also a new fence surrounding the pasture and buildings at Rocky Ford. For subdivision purposes, some three miles of new fence were erected in the Cattalo enclosure. The hauling of all material required for the above fencing was quite an item, and it was all done with our own teams.

TIMBER PERMITS.

Twenty-nine dry wood permits were issued to settlers, allowing them each to take 25 cords of wood for their own use. This was especially appreciated this year, owing to the high cost of fuel.

WILD ANIMALS.

Our herd of wild animals has increased wonderfully during the year. Six hundred and sixty-five buffalo calves have arrived since the last report was submitted, and the decrease in buffalo was 28. Of this number 17 died and 11 were shot on account of being cripples.

The elk, moose, and deer also show a fair increase, and, at this date, the animals in Buffalo Park, are as follows: Buffalo 3,561, elk 102, mule deer (estimated) 420, moose 22, antelope 2, cattalo 18, domestic cattle 11, total 4,136.

The domestic cattle mentioned above have been brought in recently, as part of the scheme which is now being carried on by the Department of Agriculture for raising cattalo.

Owing to the dry season, most of the range in the big park was cleaned off, and it was necessary to put about 2,500 buffalo in winter quarters last fall, to be fed during the winter months.

COYOTES.

A constant hunt with two packs of dogs has been kept up during the year, and over 80 of these animals were destroyed.

VISITORS.

Judging by the number of visitors we had during the year Buffalo Park is becoming more widely known. According to the records kept by the caretaker at the Wainwright end, 6,322 visitors entered the park at this point. The records kept at the Farm and Hardisty gate also show a large increase in the number of visitors; in all, over 7,000 people paid the animals a visit, which is a considerable increase over other years, and all expressed delight with their visit to Buffalo Park.

APPENDIX No. 8.

REPORT OF THE SUPERINTENDENT OF ELK ISLAND PARK, ARCHIBALD COXFORD.

During the past year, on account of the continuance of the war, only necessary repair and maintenance work was undertaken.

FIREGUARD.

The fireguards were ploughed in the month of July and disked later in the fall.

FENCING.

The main fence was in good condition and only required a few new posts and braces. Through some of the muskegs, however, the posts are very rotten and should be replaced this season. Owing to the dry weather of the past two seasons the ground is now in excellent condition for undertaking this work.

HAYING.

The weather was very good for haying this season but the growth of hay was light owing to two dry seasons. However, a sufficient quantity was put up for the winter's feed.

ROADS.

A few repairs were made to the road through the south corrals making it passable for cars. This was much appreciated by tourists who desired to see the animals.

ANIMALS.

The buffalo are in very good condition but we have to feed them since the middle of January. The winter has been very mild, but owing to the lack of rain during the summer the grazing had become very scarce and insufficient for the buffalo and elk. One old buffalo bull had to be shot as it was getting poor. By shooting it a fine head and robe were saved.

The number of animals in the park at present are:—

Buffalo	182	Moose	57
Elk	106	Deer	111

CAMPERS AND VISITORS.

This has been a record season for campers and visitors. Many requests were made by local people for sites for small summer cottages and I think this matter should be given some consideration as these people would tend to bring the park before public notice.

During the season we have had a total of 3,404 visitors.

APPENDIX No. 9.

REPORT OF THE HONORARY SUPERINTENDENT OF FORT ANNE PARK, ANNAPOLIS ROYAL, L. M. FORTIER.

Only such work has been undertaken during the past year as was essential to the upkeep of our old fort and its surroundings in a fairly presentable condition, all larger schemes being deferred for the time being.

The old sally port and its approaches, which were showing the ravages of time, received the necessary attention, as did also the stonework approaches to the two powder magazines, and the interior of one of them (that commonly known as the "black hole"), which was rather seriously affected by the last winter's frost, is now being put in thorough repair.

A most interesting addition to the park during the year has been the Vaughan memorial sundial, a personal gift, from Colonel Richard Cutts Shannon, of Brockpost, N.Y., in memory of an ancestor.

The sundial is constructed of New Hampshire granite and bronze, and stands in an oval cobblestone area outside the ramparts of Fort Anne.

It bears upon its shaft the following inscription: "Erected 1918 in memory of George Vaughan, who served as a volunteer under General Nicholson in the expedition

for the reduction of Port Royal in the ninth year of the reign of Queen Anne, A.D. 1710, and was afterwards (1715-17) Lieutenant-Governor of his native colony of New Hampshire."

The ceremony of unveiling was performed by the Lieutenant-Governor of Nova Scotia last Dominion Day, and attracted a very large number of spectators.

The Museum of Fort Anne now fills two rooms in the old officers' quarters building (now the administration building of the park) and contains an ever-growing number of objects of interest relating to the past history of Port Royal and Annapolis.

We have had not less than two thousand visitors during the year.

APPENDIX No. 10.

ST. LAWRENCE ISLANDS PARKS.

These parks, being situated among the Thousand Islands, in the centre of thickly settled communities, where all available lands have been taken up, render a great service to the public. Although they only afford accommodation to transient visitors or camping parties, they are visited by thousands of people every summer.

They afford a good illustration of the desirability of making public reservations among districts of exceptional scenic beauty. At the present time practically all the land along the Thousand Islands is privately owned, and if it were not for the Government Parks there would be no place where the public would have the right to land, to camp, or picnic, or fish. There is no doubt but that this will eventually be the case with many others of our beautiful scenic districts, and it shows how necessary it is that reservations should be made now to ensure that the public shall have access to them in the future.

The St. Lawrence parks are becoming more popular every year, and amply repay the small amount of expenditure necessary to make them available to the public.

Only such expenditure was made during the year as was necessary to maintain the present equipment and make the islands available to the public.

APPENDIX No. 11.

AGREEMENT WITH BRITISH COLUMBIA.

Memorandum of Agreement made and entered into this twelfth day of March, in the year one thousand nine hundred and nineteen;

Between

His Majesty the King, in right of His Dominion of Canada, hereinafter referred to as the "Dominion Government,"

Of the one part,

And

His Majesty the King, in right of His province of British Columbia, hereinafter referred to as the "said Province,"

Of the other part.

Whereas the said Province has commenced the construction of a portion of the road known as the Banff-Windermere road, between Windermere, British Columbia, and Banff, Alberta, and of the which the section from the junction of the said road with the Golden-Windermere road at Sinclair Creek in the district of East Kootenay, to the eastern boundary of the said province, is incomplete;

And whereas it has been agreed between the Dominion Government and the said Province that the said road shall be completed by the Dominion Government, and that in consideration thereof the said Province among other things will grant and convey in fee simple to the Dominion Government the said road in so far as it lies in the province of British Columbia and a strip of land ten (10) miles in width lying five (5) miles on each side of the said road and immediately adjoining same and shall further undertake and agree as hereinafter provided.

Witnesseth that the parties hereto mutually agree as follows:—

1. The Dominion Government shall within four (4) years from the conclusion of peace in the present war complete the construction of the portion of the Banff-Windermere road extending from its intersection with the Golden-Windermere road at Sinclair Creek, in the district of East Kootenay, to the eastern boundary of the province, provided that the Dominion shall have the right to alter the location of the road as at present laid out or projected wherever the Dominion considers alterations advisable.

2. The Dominion Government agrees that it will hereafter maintain the said road as a public highway during the months of May to October, both inclusive, in each year;

3. The said province shall grant to the Dominion Government all that certain strip of land sixty-six (66) feet in width, known as the Banff-Windermere road, as now located or as it may be located through revisions considered advisable by the Dominion Government, and which extends from its intersection with the Golden-Windermere road at Sinclair creek, in the district of East Kootenay, to the eastern boundary of the province. Where the Government of British Columbia has not title to the lands for the road, sixty-six (66) feet in width, it shall acquire same at its expense and transfer same to the Dominion.

4. The said province will grant to the Dominion Government a strip of land along the said Banff-Windermere road as laid out and completed to an approximate width of five (5) miles on each side thereof. Provided always that as far as possible the crests of the mountains shall constitute the outside boundaries of the said areas and provided further that all minerals, precious and base, and all coal and petroleum lying in and under the land so to be conveyed shall be excepted by the province from the said grant. And provided further that grants to such parts of the lands referred to in this paragraph as are now covered by timber license or lease shall only issue to the Dominion Government when such license or lease has expired, been cancelled, or the lessee or licensee has completed cutting.

The province further excepts from such grant to the extent of any interest other than that of the Crown in the same all lands held under Crown grant, pre-emption record, agreement for sale, lease, license, or other alienation by the Crown, or in which any person has a vested interest, provided, however, that upon the cancellation, abandonment or expiration of any Crown grant, pre-emption record, agreement for sale, lease, license, vested interest or other alienation by the Crown of such lands, such lands shall thereupon automatically be vested in the Dominion Government, and the province will by all proper means available endeavour to arrange that all lands within the aforesaid ten (10) mile strip alienated or in regard to which any one had any vested interests prior to the twenty-seventh (27th) day of May, 1916, shall be secured by the province and granted to the Dominion Government, and to complete arrangements with any

person holding any such lands for the relinquishment of any rights so held, and shall promptly take whatever steps are necessary for the purpose and for the end aforesaid.

In every case in which the said province exercises the powers referred to in this section the said province shall in consideration of such relinquishment or for the purpose of compensating any person for all loss or damage sustained by reason of such entry and taking possession, cause a Crown grant to be made to such person of other suitable land selected from the unalienated Crown lands in the province and the Dominion Government agree to compensate all persons who have relinquished their rights to any part of the said land and all persons who have been deprived of possession of their said lands or any part thereof outside the limits of the aforesaid way sixty-six (66) feet in width for all improvements made upon the said land by such persons who have either relinquished their rights thereto or who have been deprived of their possession if the amount of compensation to be paid be approved by the Dominion Government.

5. The grants undertaken by the last two preceding clauses shall be made immediately upon execution of this agreement and shall operate to convey the lands aforesaid as the same will be defined by the final location of the road, subject to the provisions of this agreement.

6. All lands in regard to which rights are extinguished under paragraph four (4) hereof, shall thereupon automatically be vested in the Dominion Government.

7. The province shall delegate to the Dominion Government all authority it now has or may hereafter have in regard to the utilization of timber or of any other materials from privately-owned lands or from lands now covered by any timber licenses or leases, such timber to be utilized by the Dominion Government for the purpose of constructing or maintenance of said road.

8. Mineral claims, placer claims and mining rights in the said ten (10) mile strip may be acquired only on such terms and conditions and under such regulations as the Lieutenant-Governor in Council may from time to time determine, subject to the provisions hereinafter contained.

Mineral and placer claims in the said ten (10) mile strip shall be administered by the province, provided, however, that:—

(1) No claim shall be recorded unless the Minister of the Interior certify in writing to the Minister of Mines for the province that he is satisfied that the recording and operation of such mineral or placer claim will not interfere with the scenic beauty or other features in the said area.

(2) The owner of any mineral claim, mine or placer ground shall be entitled to the use of only such portion of the surface of such mineral claim, mine or placer ground as in the opinion of the Minister of the Interior may be necessary for the effective and economical operation of the said mine or placer ground, and such area shall be leased to the owner of such mineral claim, mine or placer ground on such terms and conditions as the Minister of the Interior may specify.

(3) The possession of a free miner's certificate shall not entitle the owner thereof at any time to carry unsealed firearms within the areas in question or to take, or kill, or have in his possession any wild bird or animal therein.

(4) No person operating and working a mineral claim, mine or placer claim, shall without special authority from the Minister of the Interior be entitled to cut down any green timber standing upon the area covered by his mineral claim, mine, or placer claim.

9. The holders of existing timber licenses or leases in the areas mentioned in paragraph four (4) hereof shall be entitled to cut and carry away timber under the terms of their special timber licenses or leases and shall be subject always to the provisions of the Forest Act of the Statutes of British Columbia.

10. All water rights in the area mentioned in paragraph four (4) shall be administered by the province under the laws of the province provided, however, that no record shall be hereafter granted by the province without the consent of the Minister of the Interior, or save upon such conditions as the Minister of the Interior may specify.

Part II.

1. With respect to the areas described in paragraph three (3) and four (4) of this agreement, and with respect to all Dominion Parks now existing or which may hereafter be established within the province as aforesaid, and with respect to all persons or property situate or being within these areas or parks, including all alienated lands within the limits or boundaries of the ten (10) mile strip and the parks aforesaid, the province undertakes that its legislation and regulations thereunder shall at all times hereafter be conformable to and correspond with the legislation and regulations of the Dominion governing Dominion Parks generally, or the particular area or parks with which this agreement is concerned specially, so that there may at all times be uniformity; and that the province will not hereafter enact or maintain in force with respect to any of the parks, areas, property or persons aforesaid, any legislation or regulations in conflict with those of the Dominion. Provided that the province shall continue to exercise its powers for the areas and parks aforesaid with regard to licenses for motor vehicles and with regard to the liquor traffic; but that,—

(*a*) Holders of provincial motor licenses other than bona fide residents of the areas or parks aforesaid, shall nevertheless be subject to the payment of the Dominion Parks motor license fees as the same may from time to time be regulated or imposed by authority of the Dominion, and

(*b*) No permit to deal in liquor shall be granted without the consent of the Dominion Government.

2. As to license fees for motor vehicles owned or operated by bona fide residents of the areas aforesaid imposed or authorized by provincial legislation, the Dominion Government shall use its best endeavours to collect the same and subject to an annual deduction therefrom of the sum of $5 in respect of each license fee, shall transmit the amount of such collections annually to the province.

3. The province undertakes to enact or sanction and carry into effect all such further authority legislative or executive as may be necessary for the purpose of carrying out fully and completely the terms of this agreement, according to their true object and intent.

In Witness Whereof, W. W. Cory, Deputy Minister of the Interior, has hereunto set his hand, and affixed the seal of the Department, and the Honourable James Horace King, Minister of Public Works of the Province of British Columbia has hereunto set his hand and affixed the seal of the Department of Public Works for the said province. Signed, sealed and delivered by the Deputy Minister of the Interior,

(Sgd.) W. W. CORY.

In the presence of

(Sgd.) J. E. Gibson.

And by the Honourable James Horace King, Minister of Public Works of the Province of British Columbia,

(Sgd.) J. H. KING.

In the presence of

(Sgd.) J. E. Myers,

Private Secretary,

Minister Public Works, Victoria, B.C.

APPENDIX No. 12.

AGREEMENT WITH ALBERTA.

MEMORANDUM OF AGREEMENT between the Government of the Province of Alberta and the Government of the Dominion of Canada *re* Dominion Parks in Alberta.

LAW AND ORDER.

1. The Dominion will assume the responsibility for the maintenance of law and order in the parks, providing mounted or other police for the purpose. These police will enforce any provincial laws that are ordinarily enforced by a police force.

If any doubt should arise as to the authority of the police in the parks to act with respect to the enforcement of any of the provincial laws above referred to, the province will take whatever steps are necessary to vest them with such authority.

MOTOR LICENSES.

2. In the case of motor-cars owned by residents of a park, the owner must take out a provincial license for motors and pay therefor the fee prescribed by the province. Such license will be issued by the superintendent of the park concerned, who will be furnished with number plates and the necessary forms by the province. Of the license fee paid the Dominion shall retain five dollars, the ordinary fee for private motor-cars in the parks, and the balance of the fee shall be transmitted to the Provincial Government. The Dominion shall provide for a suitable marking on the license plates to distinguish them from the plates issued outside the parks.

In regard to motor-cycles, one-half the fee paid shall be retained by the Dominion and one-half shall be transmitted to the province.

In regard to dealers' licenses, one-half the fee shall be retained by the Dominion and one-half shall be transmitted to the province.

The province agrees that the superintendent of a park may issue free of all fees and charges, licenses for any and all motor vehicles owned by the Dominion Parks' service.

In regard to all licenses dealt with above a license issued after October 1 (good until December 31) shall be issued for half the regular fee, the division of such fee between the province and the Dominion to be made as follows: The province to receive one-half the amount it would have received had the license been a yearly one and the Dominion to receive one-half the fee it would have received had the fee been a yearly one.

Chauffeurs operating in the park shall operate under a parks' license and the entire fee therefor shall be retained by the Dominion.

All cars while operated in a park shall operate under parks' regulations.

THEATRE TICKET TAX.

3. The province will continue to collect theatre ticket tax in amusement places in the parks.

LICENSES GENERALLY.

4. The province will not collect license fees with respect to guides, pool rooms, bowling alleys, amusement places, theatres, motion-picture houses, boats' livery, restaurant, or any other matters which by their nature are closely related to the tourist, but will leave the licensing and control of all such subjects exclusively to the Dominion.

EDUCATION.

5. Educational matters will continue under the exclusive jurisdiction of the province.

In any case where legal proceedings are carried out against a leaseholder for the collection of school taxes and such action involves the transfer of the rights of the leaseholder the Dominion will as a matter of course issue departmental consent to the transfer.

The Dominion will insert a clause in all ordinary parks' leases hereafter issued for lands, making such leases subject to the payment of school taxes.

The Dominion will give a free lease of available parks' lands for school sites so long as the property is used for school purposes.

The Dominion will put a clause in any coal mining lease (surface or under rights) issued hereafter in regard to any parks lands, forest reserves lands, or Dominion lands, making the lessees responsible for school taxes imposed by the province and making the lease subject to the payment of such taxes.

6. The Dominion will insert in any coal mining leases hereafter issued with respect to parks, forest reserves or Dominion lands, a clause requiring the lessee when a school district is organized in the vicinity of the mine to erect and maintain during the currency of the lease a schoolhouse satisfactory to the Minister of Education for the province on a site provided by the mine owner satisfactory to said Minister.

(Sgd.) CHAS. STEWART,

(Sgd.) J. B. HARKIN, *Premier of Alberta.*

Witness as to signature of Premier of Alberta.

(Sgd.) W. W. CORY,

(Sgd.) H. CHANDLER, *Deputy Minister of Interior.*

Witness as to signature of Deputy Minister of Interior.

Executed at Ottawa, November 23, 1918.

PART III.

FORESTRY.

FORESTRY.

REPORT OF THE DIRECTOR OF FORESTRY.

R. H. CAMPBELL.

This report covers the work of the Forestry Branch for the fiscal year 1918-19, ended March 31, 1919.

The policy of economy which has been followed during the war was continued during the year. All controllable expenditure was kept to the lowest proportions possible and no new lines requiring large expenditure were opened up. The summer season was not a specially dangerous one for fire and the loss to the forests from this source was kept comparatively small.

While the practice of economy is necessary under war conditions, at the same time it may be pointed out that the expenditure of Canada on forestry, compared with the forest area, is the smallest in any progressive country of the world having any claim to civilization and desirous of taking its place in the world and the world markets as an important and permanent factor.

The position of Canada in the world as a forest country is a large and important one, and in the Britsh Empire it is even more important. The authorities on forestry in the British Isles are laying stress on the unique position held by Canada in the British Empire for the supply of coniferous timber, and have been urging on the Imperial Government the necessity for providing fully for the proper protection and management of Canadian forests. The situation in Canada is complicated by the fact that the forests are divided in ownership among a number of governments which have independent jurisdiction, but it would seem that in response to the call from the Imperial Government some wider system of co-operation between the Federal and Provincial Governments might be worked out.

The legislation in Manitoba and Saskatchewan requiring the taking out of permits before setting out fire for the clearing of land has much improved the situation from the forest fire point of view. The authorities of the province of Manitoba authorized the Dominion forest service to administer the permit law and, on the whole, the system in that province has worked out well. In Saskatchewan no provision was made by the provincial authorities for an organization to carry out the law, nor did they give authority to the Dominion fire rangers to do so. In that province therefore this provision of the law has remained largely a dead letter. The province of Alberta has not as yet passed similar legislation.

The necessity for well organized research work in forestry becomes more and more manifest as the forests become more mature and timber operations develop. Forest research is an essential part of the forestry programme in all countries where forest management is taken up seriously, and if Canada wishes to remain in the van of progress and have her forest practice based on sound scientific and permanent principles, thorough scientific and careful study of the forests and forest trees should be organized on a basis adequate to the importance of the forest and to Canada, as one of the greatest forest countries in the world. A division in the Forestry Branch to initiate, organize, and develop such work should be established without delay. It seems clear that in the organization of scientific research the federal authorities should lead the way.

WHITE PINE BLISTER RUST.

The committee appointed to deal with the white pine blister rust, as explained in last year's report, continued its operations during the year.

Sample areas for the special study of the disease were located in the provinces of Ontario and Quebec, and from these it should be possible in a short time to obtain accurate knowledge of the disease and the methods by which it spreads. Scouting for the location of the disease was also continued in Ontario, Quebec and in the Prairie Provinces. No new facts as to the spread of the disease were, however, ascertained.

During the coming year the scouting and the development of the sample areas will be continued. It is also proposed to restrict the movement of currant and white pine stock from nurseries in infected districts.

STAFF.

The total permanent staff of the branch for the last year was as follows:—

Head office	42
District inspectors	5
Assistant inspectors	2
Forest supervisors	15
Forest assistants	5
Forest rangers	102
Chief fire rangers	11
Inspectors of tree-planting	9
Forest Products Laboratories, technical staff	18
Outside clerical staff	41
On military leave	21
Total	271

The total number of men who enlisted is 79.

APPROPRIATION.

The appropriation for the year was $650,000. The expenditure was divided as follows:—

Salaries at head office	$10,922 57
Salaries of officials on military leave	10,323 09
Travelling expenses	590 64
Printing and stationery	6,809 96
Miscellaneous expenses	8,632 54
Statistics	2,912 40
Fire-ranging	173,494 88
Forest reserves	311,698 90
Tree planting	55,977 12
Forest Products Laboratories	52,138 22
War appropriation	6,319 81
Total	$639,820 13

NOTE.—The item of $6,319.81 shown under War Appropriation was drawn from the Forestry appropriation and later refunded.

The field expenditure, exclusive of tree-planting on prairie farms, is divided as follows among the provinces:—

Manitoba	$ 88,295 82
Saskatchewan	132,709 60
Alberta	165,825 38
British Columbia (Railway Belt)	98,362 98
Total	$485,193 78

LIBRARY.

In spite of the ever-widening range of interests which forestry is reaching the endeavour in the library has been to confine the literature strictly to forestry and to subjects pertaining to the administrative work of the branch. As regards current

forestry literature the library is pretty complete. Much has still to be done, however, in the way of collecting foreign forestry literature, particularly that relating to French forestry which has so favourably impressed many of the Canadian foresters who have lately been brought into contact with it in the army.

During the year 55 books and 457 pamphlets were received in the library. Forty-seven magazines and papers were regularly received through paid subscriptions and 45 by exchange.

The additions to the list of photographs numbered 448. A number of these were not negatives. The small amount of survey work undertaken last year and the reduced staff on the reserves fully account for the decrease in the number of photographs received as compared with other years. Sets of lantern slides in both the head office and the offices of the district inspectors of forest reserves received attention, as well as the revision of a lecture provided to accompany them.

PUBLICATIONS.

More than ever the effort has been to make the publication work as efficient as possible in order to secure the maximum of economy. The far-reaching changes introduced by the Editorial Committee have been loyally carried out, and while the information collected by the Forestry Branch has been made as accessible as possible to the public, as in the past, not an unnecessary page of letterpress or inch of engraving has been made. The steady demand for the bulletins issued shows that the public appreciate and make use of them. The standardizing of all printed forms used by the branch has been continued as each form comes up for reprinting, with ever increasing saving in time and money. The evidence of those in the field shows that publicity is the best means by which to fight forest fires and that an effective poster is one of the most powerful weapons used in this fight. The effort therefore to produce striking posters each year continues with experiments with new materials to obviate the use of those of which the price has been greatly raised by after-the-war conditions. The list of bulletins issued during the year is given below, and in addition there should be mentioned Bulletin 66, "Utilization of Waste Sulphite Liquor," upon which the work was practically completed, but the actual issuing of which was delayed by unavoidable causes until after the end of the fiscal year.

Bulletin No. 63—Wood-using Industries of Quebec, in English and French.
" No. 64—Forest Fires in Canada, 1914-15-16.
" No. 65—Forest Products of Canada, 1917: Poles and Cross-ties.
" No. 67—Creosote Treatment of Jack Pine and Eastern Hemlock for Cross-ties.
" No. 1—Tree Planting on the Prairies of Manitoba, Saskatchewan and Alberta. (7th Edition, revised.)

STATISTICS.

The work of collecting, compiling and publishing statistics relating to forest products, with the exception of poles and cross-ties, was taken over by the Bureau of Statistics of the Department of Trade and Commerce in 1917. The entire field was covered by the Bureau in 1918. The Forestry Branch co-operated in this work in the preparation of lists and schedules. The forms received were revised by the Forest Statistician of the Forestry Branch who also revised the reports before publication.

Owing to the fact that the Bureau of Statistics has legal authority to collect the desired information and has a large trained staff for the necessary compilation it is believed that this co-operative arrangement will result in the publication of more complete statistics than have been hitherto obtainable.

TREE PLANTING.

The distribution of trees from the forest nursery stations at Indian Head and Sutherland, Saskatchewan, for planting on farms on the prairies continues steadily from year to year. In the spring of 1918, 5,765,000 trees were distributed to 4,388 applicants. In the southern parts of Saskatchewan and Alberta the early part of the summer was very dry with considerable wind, so that the conditions for the establishment of plantations were far from good. Such a season, however, brought clearly before the farmers the advantages of proper preparation of the soil and of thorough cultivation thereof after the trees were set out. Although there were considerable losses in some plantations the losses were small and almost negligible in places where proper preparation and cultivation of the soil were thoroughly practised. Since the inauguration of the system of distribution of trees to prairie farmers 49,849,271 trees have been distributed and in all cases where reasonable care was taken and instructions followed the plantations have been, and continue to be, successful. The number of trees ready for distribution in the spring of 1919 was 5,388,714.

The number of trees planted in the forest reserves was 196,350, mostly white spruce, jack pine and Scotch pine. Most of these were set out in the forest reserves located among open prairie and agricultural lands and form part of a general scheme of reforestation. Some of them, especially on the Pines and the Riding Mountain forest reserves, were set out in small sample plots from which it is expected in time to derive valuable information as to the most economical and efficient means of establishing plantations.

Two experiments in seeding were also carried out, one in Manitoba and one in Alberta. On the Spruce Woods forest reserve in Manitoba ten acres were prepared by removal of the grass and disking, and were sown broadcast with white spruce and jack pine seed in the spring of 1918. Although the conditions for germination were unfavourable during a great part of the season it was found in the fall that sufficient of the seed had germinated to give 1,864 trees per acre. As this experiment was so successful in a bad season and as a method of reforestation it is comparatively cheap, it is proposed to experiment further with it. Some five acres on the Cooking Lake forest reserve in Alberta were also seeded with spruce and jack pine with results that are decidedly encouraging.

TREE SEEDS FOR GREAT BRITAIN.

In response to requests from forestry authorities in the United Kingdom tree seeds were collected in British Columbia by officers of the branch. These were forwarded to the Forestry Commissioners for Great Britain to be used in the carrying out of reforestation plans under way in the United Kingdom. The seeds included those of Douglas fir, Sitka spruce, alpine fir, and of other species which the British authorities desire to test.

FIRES.

The early spring season of 1918 opened badly for forest fires. The snow went off early and this was followed by a few weeks of dry weather with high winds. In the southern parts of Manitoba, Saskatchewan and Alberta the dry weather continued throughout the greater part of the season. In British Columbia the dry spring was followed by some wet weather, but in the early summer it became dry again and in the fall there was another dry, windy spell of several weeks which, especially in the Coast district, resulted in several extensive forest fires. Fortunately in the northern parts of Manitoba, Saskatchewan and Alberta the season was generally a normally wet one and the danger or damage from fire was not great. A statement of all the fires

combated by officers of the Forestry Branch both inside and outside of the forest reserves and the causes of them is given in the following table, together with a comparison of the percentage due to each cause in the last three years.

Cause.	Number of Fires, 1918.	Percentages. 1918.	1917.	1916.
Unknown	246	27	32	30
Campers and travellers	129	14	18	20
Settlers	205	23	22	18
Railways	204	23	17	20
Lightning	45	5	4	7
Lumbering	22	2	3	3
Incendiary	15	2	2	1
Brush disposal (other than by settlers)	13	2	1	—
Other known causes	19	2	1	1
Total	898	100	100	100

The educational work done by the forest officers and the forest and fire rangers is showing its effect in the greater care exercised in regard to fire by the public generally. A permit system for setting out fires for clearing land properly authorized by statute in every province and with proper arrangements for its enforcement will add very much to the efficiency of the forest fire prevention service and is one of the most important forward steps immediately possible and necessary.

FIRES AND RAILWAYS.

The inspection of railways and the fire patrol along them was carried out as usual. The staff employed consisted of one permanent inspector having a general jurisdiction, and 7 temporary inspectors. The only railway about which it was necessary to make any severe criticism was the Edmonton, Dunvegan, and British Columbia Railway in northern Alberta. The fire patrols on the government-owned railways, such as the Hudson Bay Railway and the Transcontinental Railway, which do not come under the regulations of the Board of railway Commissioners, were furnished by this branch. The number of patrolmen employed was 7.

FOREST RESERVES.

The forest reserves which are the areas unsuitable for agriculture which are set apart permanently for forest production include an area of 27,974,464 acres. The permanent staff employed thereon during the year was as follows: District inspectors, 4; assistant inspectors, 2; forest supervisors, 15; forest assistants, 5; forest rangers, 102: Total, 128. The temporary staff of rangers on the reserves numbered 63. This staff is too small for the large area to be protected and managed and it should be enlarged at the earliest opportunity. The class of men appointed as forest rangers has improved with the placing of appointments in the hands of the Civil Service Commission, who make qualifications for the work required the rule for appointment.

Improvements.—The construction of improvements such as houses, cabins, etc., which will enable the forest rangers to live in their districts, and such as roads, trails, telephone lines, lookout towers, etc., which improve communications and assist in the protection and management of the forests, has been continued. The systems of improvements have been planned carefully and when in the course of a few years the main systems are completed the protection and management of the forest should be carried out much more efficiently and with considerable reduction in cost. Following

is a statement of improvements completed during the year with the total and average cost:—

Class of Improvements—			Total.	Average.
Cabins	Number	8	$ 2,341	$ 293
Houses	"	3	4,887	1,629
Stables	"	7	2,250	321
Other buildings	"	15	3,614	241
Lookout towers	"	4	785	196
Telephone lines	Miles	144	11,922	83
Fireguards ploughed	"	131	914	7
" cleared	"	4	220	55
Roads	"	36	10,340	287
Trails	"	137	4,360	32
Miscellaneous projects, such as fences, etc			1,580	—
Total			$43,213	

Timber operations.—There was a considerable increase in the timber operations in the forest reserves during the year. The high cost of lumber and the high cost and scarcity of fuel resulted in many more people than usual resorting to the forests for their supplies. The number of permits issued for wood and timber was 4,142, and the quantities cut thereunder totalled 6,783,104 feet board measure; 1,065,934 lineal feet, and 43,557 cords. The number of free permits was 1,715. There were twelve millsite locations on the forest reserves occupied for cutting lumber for settlers under their permits. Twenty-one timber sales were in operation during the year. The cut of saw-timber on such sales was 1,607,362 feet board measure; of mine-props, 2,188,767 feet board measure and 1,212,752 lineal feet; and of lagging, 1,455 cords and 400,000 lineal feet.

The operators are all conducting the timber operations more carefully. Stumps are cut low, trees are utilized as fully as possible, the brush is disposed of and the tracts operated are being left in good condition for protection against fire and for reproduction of the forest.

Fires.—There were 116 fires on the forest reserves as compared with 159 in 1917. Eighty-one of these fires, 70 per cent, burned over more than ten acres each. The total area burned over was 109,735 acres, of which 3,529 acres were covered with merchantable timber, and 26,472 acres with young trees.

A statement of the number of fires on forest reserves in 1918 and their causes is given below with a comparison of the percentage due to each cause in the last three years.

Cause.	Number of Fires, 1918.	Percentages. 1918.	1917.	1916.
Unknown	46	40	31	34
Campers and travellers	23	20	21	22
Settlers	15	13	18	24
Railways	13	11	14	9
Lightning	4	3	5	2
Lumbering	5	4	3	—
Incendiary	7	6	4	6
Brush disposal (other than by settlers)	3	3	1	2
Other known causes	....	....	3	1
Total	116	100	100	100

Forest Nurseries.—The supply of trees for reforestation on the forest reserves was obtained largely from the nursery stations at Indian Head and Sutherland, but, in order to develop such work on the forest reserves convenient to the places where planting is to be done and in order to give training in forest nursery and forest planting work to the staffs on reserves where planting is necessary, small nurseries have been started on several of the reserves. These include the Spruce Woods reserve in Manitoba, the Pines and Moose Mountain reserves in Saskatchewan, and the Cypress Hills and

Cooking Lake reserves in Alberta. These reserve nurseries will not be increased to large dimensions, so as to be general sources of supply, but will be developed to serve the full requirements of the reserves on which they are situated.

GRAZING.

The number of grazing permits issued during the year was 1,172 and the total number of stock grazed was 86,605. Of this total there were 10,575 horses, 48,420 cattle, and 27,610 sheep. These figures represent the striking increase over last year of 656, or 127 per cent, in the number of permits issued, and 58,714, or 210 per cent, in the number of stock grazed. The forest reserves in the Railway Belt in British Columbia are not represented in the above figures, as the Forest Reserve Regulations in regard to grazing have not yet been applied to the Dominion reserves in that province. A change of opinion has, however, been developing in British Columbia in favour of regulated grazing and a beginning in this direction will be made on provincial lands during the season of 1919. It is possible that similar action may be taken on Dominion forest reserves in the Railway Belt the following season.

The remarkable increase in the number of stock grazed on forest reserves during recent years indicates that the stock-owners are rapidly coming to appreciate the value of the range and the benefits of a regulated use of it. The regulations are designed to give special consideration to the small owner and to make the forage resources of the reserves available to the largest number of persons possible. This policy has led to a development in two directions, namely, the organization of settlers into stock or grazing associations, and the undertaking of grazing surveys and the formulation of working plans with a view to securing improvement and fuller utilization of the available forage.

The stock association is proving to be the best means of utilizing large areas, and its officers, acting in an advisory capacity, assist in the various problems incidental to range administration. The department passes upon the constitutions of these associations and is careful to see that the conditions of membership are not such as to debar any settler who is entitled by the Forest Reserves Regulations to obtain grazing privileges.

The increasing demand for grazing privileges on some of the reserves has made it necessary to obtain reliable information as to the carrying capacity of the grazing districts and for that purpose an expert has been employed in Alberta during the year to make grazing reconnaissances on several of the reserves. On the information thus obtained working plans have been made, the adoption of which has already enabled many additional stock-owners to share in the benefits of the reserves.

A very serious feed crisis which arose in southern Alberta last summer brought the grazing resources of the forest reserves into prominence. Notwithstanding the serious conditions which existed generally throughout the province, the forage growth in the forest reserves was good, and by arrangement with the forest officers approximately 25,000 head of stock were taken into the reserves from districts where feed was scarce, and were brought through the crisis in excellent condition.

RECREATION.

The summer resorts are proving their growing popularity by attracting a larger number of visitors each year. Building operations were suspended to a large extent during the war but are now being resumed and many attractive summer cottages are being constructed. A certain amount of roadwork is being carried out from time to time to make the resorts more easily accessible.

The policy of restricting methods of fishing to those of angling and trolling is producing results in the improved fishing to be found in the lakes in the vicinity of the

summer resorts. There is no doubt that good fishing doubles the attractions of any summer resort, and the fact that the development of recreational use of the forest reserves is a means of securing public sympathy and support for forest protection is not overlooked in the administration of these resorts.

GAME.

Many of the forest reserves are entirely, or in part, game preserves, established as such by provincial legislation; and in all cases the forest officers, while not primarily responsible for game protection, co-operate with the provincial authorities in the protection of the game. In many cases where for the protection of a particular species a closed season has been declared, the value of the forest reserves has again been demonstrated by affording sanctuary to the particular game in question and permitting their numbers to increase.

FIRE-RANGING OUTSIDE FOREST RESERVES.

The fire patrol on wooded lands outside the forest reserves was continued as usual. Fortunately in a large part of the districts covered in the northern forests the season was generally favourable and the results for the season were on the whole satisfactory. The greatest damage was done in British Columbia but over 50 per cent of this damage was done by one fire which started south of the international boundary and, after burning for some days, crossed the boundary with a strong wind behind it on a three-mile front and was absolutely uncontrollable while that wind lasted.

The rangers did considerable work in the improvement of trails and other means of communication, erecting cabins and lookout towers and providing other means to improve the conditions of living in the forest and to assist in its protection.

The number of chief fire rangers employed was 11, each having charge of a large district and of about 20 fire rangers. The number of fire rangers and assistant fire rangers temporarily employed was 219. The number of fires which occurred was 782 compared with 926 in 1917. The total area burned over was 147,608 acres, of which 18,830 acres carried merchantable timber and 16,013 acres were covered with young growth.

Herewith is a statement of the number of fires outside the reserves in 1918 and their causes, together with a comparison of the percentages due to each cause in the last three years:—

Cause.	Number of Fires, 1918.	Percentages. 1918.	1917.	1916.
Unknown	200	26	32	30
Campers and travellers	106	14	18	20
Settlers	190	24	23	19
Railways	191	24	17	20
Lightning	41	5	4	7
Lumbering	17	2	3	3
Incendiary	8	1	2	—
Brush disposal (other than by settlers)	10	1	1	—
Other known causes	19	2	....	1
Total	782	100	100	100

FOREST SURVEYS.

Owing to the necessity of keeping expenditure as low as possible and to the difficulty of obtaining qualified men, the forest survey work has been reduced to as small dimensions as possible. The only forest survey party organized was the one carrying out the survey of the Petawawa reservation. It was hoped to complete the survey during the past season but toward the end of the season the party was broken up by influenza, and at the end of the season there still remained about one-third of the area

to be surveyed. It is hoped to complete the survey during the coming year. The tract is a characteristic pine and spruce site and will give opportunity for valuable experiments in regard to the yield and the reproduction of these important species.

FOREST INVESTIGATIVE WORK.

During the season several sample plots were set apart on the Petawawa forest experiment station, measured, mapped, and recorded for special study. These plots were marked and mapped according to the latest methods adopted by forest research institutes, and covered some of the principal types of stands, including white pine, red pine, and white birch, in various mixtures. Experiments in thinning were inaugurated on permanent sample plots. Continuous and careful observations and measurements on these plots will give valuable information in regard to the growth and yield of individual trees and of stands under differing conditions of soil, soil-moisture, density, light, and composition.

FOREST PRODUCTS LABORATORIES.

The main laboratories at Montreal suffered seriously during the year through continued loss of staff, owing to better opportunities for salaries and advancement with industrial firms. The losses of men during the year included the chief chemist, the chief of the Pulp and Paper Division, and most of the staff in that division, the chief of the Division of Timber Physics, and finally the assistant superintendent and the superintendent of the laboratories. With these heavy losses in staff it has been difficult to carry on the work satisfactorily. The main lines of investigation have been continued and some completed.

On representations made by the Imperial Munitions Board which desired more complete and thorough tests of airplane timbers in British Columbia, the establishment of a branch testing laboratory at Vancouver was considered and finally an arrangement was worked out with the University of British Columbia for the establishment of such a laboratory. Mr. L. L. Brown, a member of the staff of the laboratories at Montreal, who had just returned from service overseas in the army, was placed in charge. This laboratory is first proceeding with tests of Sitka spruce and other airplane timbers and will later develop more general studies of British Columbia woods, such as may assist that province to compete in home and foreign markets.

TABLE 1.—Statement of Revenue, Forestry Branch for the fiscal year ended March 31, 1919.

Reserve	Timber Sales	Timber fees and dues	Timber Seizures	Grazing permit and trespass dues	Hay permits and seizures	Surface Rentals	Special Uses	Nursery Stock	Unclassified	Total
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Turtle Mountain		76 75	13 96	2,046 50	245 85	70 00	7 00			2,460 06
Spruce Woods		45 00	11 00	765 75	90 35					912 10
Riding Mountain	184 00	12,521 00	654 29	862 95	725 70	67 80	615 00			15,630 74
Duck Mountain		3,208 16	1,637 84	167 60	253 95	210 00	3 25			5,480 80
Moose Mountain		254 60	55 00	590 65	558 20	90 00	10 81			1,559 26
Beaver Hills		248 00	74 25	321 50	451 20		1 00			1,095 95
Porcupine	482 91	579 63	105 90	99 85	251 75		4 50			1,524 54
Pasquia	4,034 58	4,178 73	376 75	181 80	188 20		5 25			8,965 31
Fort à la Corne	103 83	700 85	13 00	21 25	22 00		100 00			960 93
Pines		519 85		387 75	96 40		1 75			1,005 75
Nisbet		816 00	14 35	141 80	60 85		3 75			1,036 75
Big River		107 00		66 70	145 65		14 75			334 10
Steep Creek		57 75		25 25						83 00
Sturgeon		28 58		33 50	54 10		3 75			179 93
Keppel		324 85		656 10	67 60		3 75			1,052 30
Manito		139 90	8 00	765 65	78 75		7 00			999 30
Dundurn		17 25		302 35	53 00		2 00			374 60
Seward				534 45	86 80		4 75			626 00
Elbow		3 50		380 90	82 35		7 00			473 75
Big Stick		25		3,681 75	7 25		6 25			3,695 50
Cypress Hills	184 18	1,073 53	108 81	1,597 77	705 50	20 00				3,689 79
Cooking Lake		48 00		610 80	237 10		73 00			968 90
Crowsnest	1,977 27	1,156 42	76 41	5,751 07	64 80	53 55	796 20			9,875 72
Bow River		464 24	350 00	3,702 09	128 10		43 70			4,688 13
Clearwater	6,851 73	358 75	508 35	43 00	27 90	221 73	111 75			8,123 21
Brazeau	2,094 34	1,860 94	33 75		85	11 00	86 00			4,086 88
Athabaska		4 50					33 75			38 25
Lesser Slave	50 00				20 25		75			71 00
British Columbia Reserves	250 00	278 00	79 93	5 00	27 70	93 50	23 30			757 43
Indian Head								1,039 00	979 01	2,018 01
Total	16,212 84	29,072 03	4,121 59	23,803 78	4,732 15	837 58	1,970 01	1,039 00	979 01	82,767 99

TABLE 2.—Statement of Timber Permits issued for the fiscal year ended March 31, 1919.

Reserve	No. of Permits.		Kinds and Quantities of Timber Authorized to be Cut.								Dues and fees
	Free	Paid	Poles or Rails	Fence Posts	Saw Timber	Cross ties	Mine Timber	Building Logs	Fuel Green	Fuel Dry	
					Ft. B.M.		Lin. Ft.	Lin. Ft.	Cords	Cords	$ cts.
Turtle Mountain	59	14		5,450	3,000			2,500		1,425	76 75
Spruce Woods	82	8								1,353	45 00
Riding Mountain	363	940	10,350	56,610	4,344,552			42,321	782	7,013	12,521 00
Duck Mountain	227	266	900	23,066	1,132,260			38,495		4,164	3,208 16
Moose Mountain	10	58	90	6,255				13,880	107	397	254 60
Beaver Hills	115	34	400	300	31,010			21,290		1,440	248 00
Porcupine	106	41	3,500	14,000	679,009			32,892	52	185	579 63
Pasquia	18	69	8,200	86,082	43,408			16,816		9,158	4,178 73
Fort à la Corne	92	94	10,298	12,068	193,763			23,699		1,957	700 85
Pines	22	49	975	9,413	21,836			2,510	66	742	519 85
Nisbet	55	78	2,650	3,650	12,754			2,414		2,078	816 00
Big River	15	5	3,300	1,500				2,800		620	107 00
Steep Creek	14	11	100	3,183						284	57 75
Keppel	27	136	900	2,035	1,000			11,500	484	500	324 85
Sturgeon	7	5	1,100	500	6,512			3,804			28 58
Elbow	8	1							5	66	3 50
Manito	75	65	4,950	14,460	10,000			5,250	185	1,012	139 90
Dundurn	8	5							30	188	17 25
Big Stick	1									10	0 25
Cypress Hills	223	359	59,997	51,675	2,400		1,200	48,160	533	3,632	1,073 53
Cooking Lake	18	9		2,800				2,500		462	48 00
Crowsnest	87	102	27,375	11,810	300,600		100,174	63,609		2,304	1,156 42
Bow River	51	43	6,841	8,500			10,000	29,373		1,455	464 24
Clearwater	8	7					70,000	10,063		365	358 75
Brazeau	4	11				1,140	123,000	346,654		75	1,860 94
Athabaska (Payment on timber cut previous year)											4 50
British Columbia Reserves	13	17	5,420	2,080		1,000	30,542	10,488		428	278 00
Total	1,715	2,427	147,346	315,437	6,783,104	2,140	334,916	731,018	2,244	41,313	29,072 03

TABLE 3.—Statement of Grazing Permits issued on Forest Reserves in the fiscal year ended March 31, 1919.

Reserve	No. of Permits	Number of Stock				Dues and fees collected
		Cattle	Horses	Sheep or Hogs	Total	
						$ cts.
Turtle Mountain	115	1,800	299		2,099	1,922 50
Spruce Woods	45	881	52		933	765 75
Duck Mountain	15	610	39		649	167 60
Riding Mountain	48	3,119	94		3,213	840 95
Moose Mountain	72	2,034	159		2,193	590 65
Porcupine	7	415	56		471	97 35
Pasquia	18	712	22		734	181 80
Pines	13	1,406	42		1,448	387 75
Beaver Hills	56	984	97		1,081	321 50
Fort à la Corne	1	70			70	21 25
Nisbet	9	373	27		400	141 80
Big River	4	344	10		354	66 70
Sturgeon	7	249	31		280	93 50
Keppel	44	1,689	248	2,000	3,937	656 10
Manito	58	1,927	354	42	2,323	707 80
Dundurn	18	914	163		1,077	302 35
Seward	43	802	491	1,196	2,489	521 70
Steep Creek	1	100			100	25 25
Elbow	47	1,118	341		1,459	380 90
Big Stick	79	4,798	1,059	3,367	9,224	3,681 75
Cypress Hills	126	2,364	2,952	1,450	6,766	1,581 77
Cooking Lake	29	2,647	82		2,729	597 80
Crowsnest	211	10,329	1,801	19,555	31,685	5,713 68
Bow River	112	8,617	2,106		10,723	3,702 09
Clearwater	2	100	50		150	45 00
British Columbia Reserves	2	18			18	5 00
Total	1,172	48,420	10,575	27,610	86,605	23,518 29

TABLE 4.—Statement of Timber cut on Forest Reserves under authority of Timber Sales in the Fiscal Year ended March 31, 1919.

Reserve.	Previous Sales still operating.	Sales made Current Year.	Saw Timber.	Mine Timber.				Dues Collected.
				Props.	Props.	Lagging.	Lagging.	
			Ft. B. M.	Ft. B. M.	Lin. Ft.	Cords.	Lin. Ft.	$ cts.
Big River	1							
Fort à la Corne	1		69,217					103 83
Porcupine	1	1	2,988					7 30
Pasquia	2	2	426,984					958 88
Brazeau	3				434,577	6	400,000	955 35
Clearwater	1		370,359	2,188,767		791		6,850 73
Crowsnest	6	1	615,025		778,175	658		2,192 92
Cypress Hills	1		122,789					184 18
Larch Hills		1						
Total	16	5	1,607,362	2,188,767	1,212,752	1,455	400,000	11,253 19

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TABLE 5.—Statement showing the quantity of timber sold and revenue due during Fiscal Year ended March 31, 1919, on license timber berths within Dominion Forest Reserves.

MANITOBA.

Forest Reserve.	Timber Berths.	Area in Reserve.	Quantity Sold.			Revenue.		
			Lumber.	Lath.	Other* Products.	Dues Payable.	Rent Payable.	Total Payable.
	No.	Sq. Mls.	Ft. B.M.	No.		$ cts.	$ cts.	$ cts.
Riding Mountain	4	44·33	576,953		11,182	365 98	222 15	588 13
Duck Mountain	11	99·98	11,704,835			4,872 93	499 90	5,372 83
Total	15	144·41	12,281,788			5,238 91	722 05	5,960 96

SASKATCHEWAN.

Porcupine	47	944·09	37,262,064	5,865,100	14,204	15,984 68	4,261 95	20,246 63
Sturgeon	12	171·93	74,065,734	8,221,514	1,482	33,982 12	862 08	34,844 20
Big River	3	260·77	13,569,790	4,191,200		13,600 19	1,303 85	14,904 04
Nisbet and Pines	4	110·08	5,875		4,268	2,218 09	173 15	2,391 24
Total	66	1,486·87	124,903,463	18,277,814		65,785 08	6,601 03	72,386 11

ALBERTA.

Crowsnest	11	259·94	6,886,721		525,295	3,573 69	1,374 70	4,948 39
Bow River	15	367·37	4,180,546		6,362	2,286 89	1,825 60	4,112 49
Clearwater	4	377·56					1,887 80	1,887 80
Brazeau	11	178·04				350 94	1,131 30	1,482 24
Total	41	1,182·91	11,067,267			6,211 52	6,219 40	12,430 92

BRITISH COLUMBIA.

B.C. Reserves	11	133·57	175,283		1,900	158 58	667 85	826 43

GRAND TOTAL.

	133	2,947·76	148,427,801	18,277,814		77,394 09	14,210 33	91,604 42

* The figures in this column indicate the number of units upon which the dues were calculated. They include the following: 11,182 logs, 6,957 fence-posts, 14,164 railway ties, 6,775 cords of wood, 521,430 lineal feet of mine timber, and 300 telephone poles.

PART IV

RECLAMATION

RECLAMATION

REPORT OF THE DIRECTOR OF THE RECLAMATION SERVICE.

E. F. DRAKE.

The branch of the departmental service formerly known as the "Irrigation Branch" was, by authority of an Order in Council, dated 31st December, 1918, superseded by "The Reclamation Service." The change became necessary because of the increasing importance of the administrative work relating to drainage by virtue of agreements between the Dominion Government and the Governments of the provinces of Alberta and Saskatchewan as confirmed by provincial legislation, viz., "The Reclamation Act" of the province of Alberta, and "The Reclamation Act, 1917," of the province of Saskatchewan. In so far as the Dominion Government is concerned, the agreement previously referred to was confirmed by drainage regulations sanctioned by an Order in Council dated 14th January, 1919, and by "The Reclamation Act," chapter 5 of the statutes of 1919.

This legislation marks the successful conclusion of negotiations carried on for several years between the Dominion Government and the governments of the provinces of Alberta and Saskatchewan for the reclamation of submerged or swamp lands by drainage and paves the way for a progressive policy whereby large areas of now worthless land in these provinces may be reclaimed and made productive. It is anticipated that the Manitoba Government, with whom similar negotiations were carried on, will before long enact legislation on somewhat similar lines.

The problem presented by drainage in these provinces was peculiar: The ownership and control of all sources of surface water supply, including lakes, marshes, etc., is vested in the Dominion Government, which also owns the unalienated public land, while control of the drainage of land is vested in the Provincial Governments. This divided jurisdiction had invited controversy and had seriously interfered with the reclamation of submerged or swamp land and with the construction of roads, and, generally, had exercised a retarding effect upon the settlement and development of the districts comprising any considerable areas of such land.

The present arrangement is in the nature of a compromise of the apparently conflicting interests. Where drainage districts are organized in accordance with provincial laws the Dominion Government will, under certain conditions, transfer to the province, at a nominal price, any vacant Dominion lands within such districts in order that such lands, when reclaimed, shall be assessable for their fair share of the cost of their reclamation, and be thereafter sold by the province at public auction subject to such conditions as may be agreed upon at the time of the transfer. On the other hand, the Provincial Governments will, when the Dominion Government desires to take the initiative in the construction of drainage works, place at the disposal of the Dominion all their legislative machinery, upon the condition that the lands when reclaimed shall be sold at public auction, and that the purchasers shall thereafter become responsible for the maintenance of the drains, in the same manner as if the works had been initiated by the settlers themselves under provincial laws.

Provision is made in the Dominion Reclamation Act that the Governor in Council may, upon the passing of the necessary legislation by the legislature of the province of Manitoba, make the said Act extend and apply to Dominion lands situated in that province.

CLIMATIC AND CROP CONDITIONS FOR 1918.

Reference was made in my report of last year to the high cost of labour and material, which had, to a very great extent, discouraged construction work. These conditions continued throughout 1918, and, as a result, very little actual construction work was undertaken. Climatic conditions during the past year, from the standpoint of the farmer in Western Canada, could not well have been worse. The season of 1917 had been exceedingly dry and this condition continued throughout the whole of the following year, with the result that the scanty supplies of moisture stored in the soil were gradually depleted and were not replenished by natural rainfall. The result was extreme drought throughout Southern Alberta and Southwestern Saskatchewan, and practical crop failure, except in particularly favoured localities or where the land had been carefully summer-fallowed.

In the central and northern portions of both provinces a very severe frost occurred on or about 25th July—an almost unprecedentedly early date for killing frost. The result was that the wheat crop for the province of Alberta averaged about 6 bushels per acre, and the oats crop about 23 bushels per acre, while in the province of Saskatchewan the yields were 10 bushels for wheat and 21·5 bushels for oats.

In adidtion to the practical failure of the grain crops, the food question became very acute: Pastures practically dried up; very little hay for winter food could be harvested in the south, and the carrying of cattle through the winter became an exceedingly difficult problem. Fortunately, the winter of 1918-19 proved to be exceptionally mild and open, without severe storms. This, coupled with the assistance rendered by the Dominion and Provincial Governments and by the railway companies in transporting forage from the north or carrying cattle to the north, where they could be more cheaply fed, enabled the settlers to tide over the winter. More extended reference to the questions of forage and winter feeding of cattle will be found in the report of the Commissioner of Irrigation, which is submitted herewith.

Following the mild winter, the spring of 1919 opened very auspiciously with an early break-up and fine mild weather. A very large acreage was sown unusually early and prospects were more than usually bright until in late spring and early summer hot, dry winds and scanty rainfall blasted the hopes of the settlers. The long continued drought, and prevalence of hot winds throughout a considerable portion of the season indicate, at the time this report is written, that in the southern portions of the provinces of Alberta and Saskatchewan there will be practically a complete crop failure, except, possibly, in a few specially favoured localities or where irrigation has been practised.

In the tabulated statement which follows an attempt has been made to show the close relationship existing between rainfall and the yield of some typical field crops in Alberta and Saskatchewan.

It will be observed that the rainfall since 1915 has been scanty and slowly decreasing in depth, while for the same period the yield per acre has been decreasing on a more rapid scale. The conclusion to be drawn from this is, that the cumulative effect of a succession of dry years is a considerable depletion below normal of soil moisture and a consequent much greater proportional reduction of fertility.

In 1917, although the crop was below normal, enhanced prices made production about as profitable as in 1916 when the yield was above normal. The year 1918, however, did not bring a sufficiently substantial increase in prices to compensate for the decreased yield.

In Saskatchewan the area of each crop for 1918 was greatly in excess of the corresponding area in 1917, but the total yield was considerably less in each case. The same statement applies pretty closely to Alberta, except in the case of barley, where the area cropped was less than in 1917. But in this case, also, as might be supposed, the total yield was not proportionately as great as in 1917.

The causes for these conditions are to be found, primarily, in the drought of 1917 and 1918, but a great deal is also due to the severe frosts which occurred in the latter part of July, 1918, in Northern and Central Alberta and Saskatchewan.

The following tables are based upon the best obtainable information. The "normal prices" are estimated, and are, possibly, rather high, but precise information of average prices for past years is not readily obtainable:—

TABLE showing Yields of Wheat, Oats and Barley, in Alberta, for the years 1915, 1916. 1917, and 1918.

Crop and Year.	Yield per Acre.	Average Price per Bushel.	Average Price per Acre.		Yield per Acre.	Rainfall at Calgary April to August.	
	Bush.	$	$	%	%	Inches.	%
Wheat—							
Normal	22·5 [1]	1·00[2]	22·50	100	100	11·56[3]	100
1915	31 12	·88	27·39	122	138	12·27	106
1916	24·99	1·33	33·24	148	111	8·93	77
1917	18·25	1·74	31·76	141	81	6·63	57
1918	6·00	1·92	11·52	51	27[4]	5·78	50
Oats—							
Normal	42 00[1]	·34[2]	14·28	100	100		
1915	45·91	·31	14·23	100	109		
1916	48·11	·46	22 13	155	115		
1917	34·00	·63	21·42	150	81		
1918	22·75	·73	16·61	116	54		
Barley—							
Normal	28·25[1]	·50[2]	14·12	100	100		
1915	32·31	·44	14 22	101	114		
1916	29·04	·71	20·62	146	103		
1917	22 00	·98	21·56	153	78		
1918	16·50	·97	16 00	113	58		

[1]Average for 10 years, 1908–1917. [2]Estimated. [3]Average for 30 years, 1885–1914. [4]Results affected by frost 25th July, 1918.

TABLE showing Yields of Wheat, Oats and Barley, in Saskatchewan for the years 1915, 1916, 1917 and 1918.

Crop and Year.	Yield per Acre.	Average Price per Bushel.	Average Price per Acre.		Yield per Acre.	Rainfall at Swift Current from April to August.	
	Bush.	$	$	%	%	Inches.	%
Wheat—							
Normal	18·50[1]	1·00[2]	18·50	100	100	10 00[3]	100
1915	25·12	·91	22 86	124	136	10·14	101
1916	16 34	1·28	20 92	113	88[4]	14·09	141
1917	14·25	1·95	27·79	150	77	5·12	51
1918	10·00	1·99	20·00	108	54[5]	5·62	56
Oats—							
Normal	38·25[1]	·34[2]	13·00	100	100		
1915	43·48	·32	13·91	107	114		
1916	43·06	·46	19·81	152	113		
1917	27·25	·62	16·90	130	71		
1918	21·50	·70	[2]15·05	116	56		
Barley—							
Normal	26·75[1]	·50[2]	13·38	100	100		
1915	31·74	·46	14·06	109	119		
1916	27·00	·77	20·08	155	101		
1917	21·00	1·00	21·00	157	79		
1918	17·00	·88	14·96	112	67		

[1]Average for 10 years, 1908–1917. [2]Estimated. [3]Average for 30 years, 1885-1914. [4]Results affected by rust. [5]Results affected by frost 25th July, 1918.

AWAKENED INTEREST IN IRRIGATION.

As the result of successive dry seasons and partial or complete crop failure there has been a sudden and widespread awakening to the value of irrigation either as a form of crop insurance, or as a necessity to successful farming in the semi-arid regions of Southern Alberta and Saskatchewan. In his report which is submitted herewith the Commissioner of Irrigation has discussed this in such detail that little further comment is required. I desire, however, to draw attention to a few phases of the problem to which the Commissioner has not referred.

In the early days of irrigation development the then Commissioner, Mr. J. S. Dennis, roughly defined the so-called semi-arid district as a tract of some 50,000,000 acres, bounded roughly as follows: From the international boundary northward along the lower slopes of the foothills of the Rocky mountains in Alberta to the north line of township 28, thence easterly along the township line to about range 10, west of the 4th meridian, thence northeasterly across the Alberta-Saskatchewan boundary to a point some thirty miles south of Battleford, thence southeasterly to the "Elbow" of the South Saskatchewan river, and following approximately the line of the Moosejaw Portal branch of the Canadian Pacific railway, to the international boundary.

The cycle of wet years from about 1896 to 1909 caused many to assert either that it had been a mistake even to characterize this region as semi-arid, or that the climate has materially changed as the result of settlement and cultivation of the soil, and for the time these people seemingly had the better of the argument. But the recurrence of dry years, the serious crop failures resulting from drouth in 1910, 1914, 1917, and 1918, with the present prospect of a more serious failure in 1919, amply justify Mr. Dennis' early summary of the case.

Assuming that there are some 50,000,000 acres of land requiring irrigation, or that would be benefited by irrigation, it has never been asserted that all of this land could, or should be irrigated. Much of it is too high, or too rough, to be irrigated from any available source of water supply, and other portions are unsuitable for irrigated farming for other reasons. There has been a considerable development of irrigated farming within this district as shown, approximately, in the following schedule:—

Constructed.

	Acres.	Acres.
Canadian Pacific Railway Projects—		
Western section	223,000	
Eastern section	400,000	
Lethbridge	130,000	
		753,000
Canada Land and Irrigation Company		202,000
Private (small) projects		150,000
		1,105,000

Projected.

Lethbridge Southeastern (estimated area)	350,000
United Irrigation District (estimated area)	30,000
Lethbridge Northern Project (estimated area)	150,000
North Saskatchewan Project (estimated area)	1,000,000
	1,530,000

If all the irrigable lands within the projects now constructed are actually irrigated (which is by no means true), and if works were built to serve the lands in all the projects so far suggested for construction, the total irrigated area would be 2,635,000 acres, or about five per cent of the semi-arid district. It has been said that the available water supply in western America, referring particularly to the western United States, is sufficient for the irrigation of about ten per cent of the total area of land requiring irrigation. The statement is probably true in a general sense and it may

safely be assumed that even with the most careful system of conservation and use the water supply in Southern Alberta and Saskatchewan cannot be made to irrigate more than 5,000,000 acres, or ten per cent of the land that requires, or would be benefited by, irrigation.

The principal streams traversing the region referred to are the North and South Saskatchewan, Bow, Red Deer, Waterton, Belly, St. Mary, Milk, and Oldman rivers.

Bow river supplies the Canadian Pacific Railway Company's several projects and that of the Canada Land and Irrigation Company. It may be found possible to so conserve its flow as to serve some additional land, but no considerable area.

St. Mary and Milk rivers are international streams and part—approximately one-half—of their combined flow has been assigned by treaty to the United States; the remainder is already fully appropriated in Canada. The total flow of these streams, plus the Belly and the Waterton rivers, will barely suffice for, if indeed it does not fall short of, the requirements of the development already in contemplation, viz., the Lethbridge Section of the Canadian Pacific railway, the United Irrigation District, and the Lethbridge Southeastern Project.

Oldman river will furnish about enough water for the proposed Lethbridge Northern Project with its possible extensions.

Red Deer river flows in a deep and narrow valley from which it would be difficult and expensive, if not impossible, to divert it to adjacent lands.

Most of the smaller streams are already fully appropriated by settlers living along or near them, and little further development of this kind is possible except by the construction of reservoirs for the control of water that now runs to waste in periods of flood.

There remain the North and the South Saskatchewan rivers. The latter, formed by the Bow and Oldman, flows in a very deep, and generally quite narrow, valley. It is believed to be impracticable, within reasonable cost limits, to divert water from it either by gravity or by pumping for the irrigation of the adjacent bench lands, although some development of the valley lands by pumping is quite feasible.

Investigations are now being made to determine the feasibility of diverting water from the headwaters of the North Saskatchewan near Rocky Mountain House, and carrying it eastward for the irrigation of a considerable, but as yet undefined area of land in Central Alberta and West Central Saskatchewan. It is probable that this may be found practicable from an engineering viewpoint, but surveys are not yet sufficiently advanced to warrant any conjecture as to the cost of the undertaking or its commercial feasibility. It may also be found possible to divert water from this stream at some other point for use in the same district, but no surveys of any description have yet been made to test this.

It is thus apparent that further irrigation development is only possible within somewhat narrowly circumscribed limits, and many of those who are now agitating for the extension of existing irrigation systems, and for development of new ones, are doomed to disappointment.

Irrigation should be developed as fully and as rapidly as possible, but the available water supply will not suffice, and cannot be made to suffice, for the irrigation of more than a small fraction of the area for which water is required. And this is true even though steam flow be controlled and waste prevented by means of storage and regulating reservoirs.

The most disappointing feature of present-day irrigation development in Western Canada is the undisputed fact that in spite of successive dry years, and repeated crop failures, many of those who have water available have failed to use it when use would have saved their crops. Works built at considerable expense have been permitted to decay and have not been repaired because, in some years, the rainfall was sufficient for crop production and it was believed, or rather hoped, that each succeeding year

would be a "wet" one. Thus when the drouth came the restoration of the works was deferred from day to day in the hope that rain would make their restoration unnecessary, and when finally water was required immediately to save the crop the repairs could not be made in time and the crop was lost.

SUMMARY REPORT ON IRRIGATION AND CANADIAN IRRIGATION SURVEYS.

(P. H. Peters, Commissioner of Irrigation and Chief Engineer.)

ORGANIZATION OF STAFF.

The organization of the staff was similar to that of last year with the proposed change carried into effect of combining the irrigation and hydrometric work in certain districts. All field survey development work having been discontinued, the staff, mainly in the field but also in the office, has been correspondingly decreased in comparison with the years prior to 1917. A number of men on the permanent staff left our employ during the year, being drawn away by the considerably higher remuneration offered by private corporations. This had the effect of disorganizing the staff, and particularly in the hydrometric division, the office was undermanned during the whole of the year. Exclusive of summer assistants and other temporary employees, the number of persons employed on the staff was forty-three; twenty-nine being employed in the office and fourteen in the field.

STREAM ADMINISTRATION.

The work of transferring our records to the new system which has been developed, was carried on actively throughout the year. The water administration engineer devoted all of his time to this work and a great deal of progress was made during the year in getting all the various details finally worked out. Difficulties were again experienced with knotty points that had to be dealt with but it now appears that most of these have been straightened out and the largest part of the work remaining will be the final typing and checking of all the records.

HYDROMETRIC SURVEYS.

The following extracts from a report submitted to Chief Hydrographic Engineer cover in a very brief and general way, the work carried on by the hydrometric surveys division during the year.

"In order to economize as much as possible, only the most important work was undertaken. A number of the less important gauging stations were discontinued and the regular field staff was reduced to nine district engineers during the open-water period. Five of these did hydrometric work only, but the remaining four did irrigation inspections also, and therefore only spent part of their time on hydrometric work. The engineer in charge of the Calgary district also looked after the current-meter rating station. During the winter period there were seven field engineers who spent all of their time on hydrometric work.

"During the open-water period, records were taken at 138 regular gauging stations on streams in Alberta and Saskatchewan, at about 110 gauging stations on irrigation ditches and canals and at nineteen stations on lakes. Winter records were taken at ninety stations on streams during the past winter.

"During the year forty-four current-meters were rated. Fourteen belonged to the British Columbia Hydrometric Survey, three to the Manitoba Hydrometric Survey, one to the Ontario Hydro-electric Power Commission, two to the Canadian Pacific Railway Company and the balance, twenty-four, belong to this office.

"The staff was increased at the beginning of the year for the purpose of bringing the office work up to date and it was planned to have the daily discharges computed regularly up to date as the records came in, instead of leaving most of this work until the winter months. We were unable, however, to maintain the necessary staff, and the office work is still behind. During 1918 there was a scarcity of engineers, and many openings became available for members of our staff. In the nine months from April to December, fifty per cent of the staff of engineers on hydrometric work resigned. As a consequence many of the best qualified and most experienced engineers left and had to be replaced by engineers with no previous experience in hydrometric work. This seriously affected the efficiency of the staff, as it takes considerable time to gain the information and experience necessary to do good work. The field work was kept up but the office work fell behind.

"The records for the past year are of considerable value as 1918 was an exceptionally "dry" summer. The spring break-up was quite normal in the mountain streams, but on the prairie it came very suddenly and, as the ground was frozen, a large portion of the melted snow rushed into the streams and many of the small prairie streams were abnormally high. Only a small portion of water went into the ground and, following a summer of low precipitation, the prairie and foot-hill streams soon fell below normal and remained so for the remainder of the year. The high temperatures, however, kept the mountain streams nearly up to normal during the summer. When the temperature in the fall became too low to melt snow, the mountain streams also fell and the flow for most streams during the winter of 1918 was exceptionally low.

"The results of the special investigations of Sturgeon-weir and Churchill rivers near the Manitoba-Saskatchewan boundary, started in the fall of 1917, proved to be of considerable value and were, therefore, resumed last fall. These streams have good winter flows, and favourable sites for water power development exist. They will, therefore, probably assist in the early development of rich mineral deposits in that locality. Now that the war has terminated, the development of the resources in the north country will probably be resumed, and we should therefore, plan to extend our investigations of the winter flow of the larger streams in Northern Alberta and Saskatchewan.

"During the year the investigations of lake levels were increased, and during the past few months a number of stations were installed on lakes and marshes and lake outlets for the purpose of gaining records for the study of drainage schemes."

FIELD WORK.

Reference was made in last year's report to the very difficult conditions concerning water supply for domestic, municipal, and industrial purposes over a considerable area of the drier parts of Alberta and Saskatchewan and to the efforts that were being made to collect data for use in bettering these conditions. This work has been actively followed up during the past year by our inspecting engineers, who have submitted reports concerning all domestic water supplies and wells that came to their notice throughout the country. We have also been able to catalogue considerable data of this kind which has been submitted by other persons and organizations interested in the development of this area.

In this connection the summary report of the Geological Survey for 1915 contained a report and map by Dr. D. B. Dowling, which outlined the probable artesian well area in that very dry region east of Lethbridge. It is interesting to note, as the result of the Dominion Government's activity in this matter, that up to 1918 the drilling of thirty

successful wells had been reported in this area. The drilling of these wells proves the general correctness of the whole artesian area as defined by Dr. Dowling, except along the extreme eastern edge where up to date no drilling has been reported.

A commencement was made last year to reinspect all stock watering reserves. No special staff has been available for this work and it has been necessary to make the best progress possible by fitting it in with the other duties of our inspecting engineers. During 1917, fifty-nine reserves were inspected, and during 1918 fifty.

As indicated under that heading, the field work on the hydrometric surveys was carried on during both the summer and winter seasons in such a manner as to ensure the continuity of our stream flow records. Otherwise, as a general rule, only such field work as was necessary for administration was carried on. The small amount of special field work which was done is referred to briefly below.

A short field reconnaissance was made on the Lethbridge Northern Project and will be referred to further under that heading.

Mr. J. S. Tempest carried out the construction of a small earth dam at the outlet of Elkwater lake. This lake lies in the Cypress Hills Forest Reserve about thirty miles southeast of Medicine Hat and is frequented as a summer resort by a number of people. The dam was built with a view to maintaining the water-level at a certain elevation, in order to improve the lake as a summer resort. The lots laid out around the lake are owned by the Dominion Government.

In the late fall Mr. Tempest also spent several weeks making a preliminary survey to gain some additional in formation regarding the feasibility of draining Waterhen lake and marsh which lie about thirty-five miles southeast of Prince Albert.

During the fall of 1917 some river improvement work was undertaken on the Highwood river a few miles above the town of High River. The works, consisting of pile deflecting groins and an earth levee, were built to stop the Highwood from changing its whole course and running down the Little Bow river. Observations of the high water-level in the Highwood river during the spring freshets of 1918 showed that the lower part of the earth levee was not high enough to be safe during a really big flood. In the fall of 1918 a camp was erected, and by utilizing our own horses, the levee was raised to what is considered to be a safe elevation.

The same plan as last year was followed in combining the irrigation and hydrometric work in the Cypress Hills country. Instead of requiring four inspecting engineers, however, as had previously been the case when using horse transport, the work was done by two inspecting engineers, each provided with a Ford motor car and one assistant.

Cypress Hills District Northwest.—The season's work comprised 198 actual working days. Ninety-seven inspections and seven surveys were made. Eighty-six stream gaugings were made and data gathered concerning thirty-seven wells. The number of miles travelled by train was 1,648 and by motor car 7,286.

Cypress Hills District Southeast.—The season's work comprised one hundred and ninety-six actual working days. One hundred and forty-five inspections and seven surveys were made. Three hundred and fifty-six stream gaugings were made and two new gauging stations were established. Data were gathered concerning seventy-seven wells and four domestic water supplies. The number of miles travelled by train was 2,471, by hired livery 947, and by motor car 7,299. These figures include the work done on the special measurement of early spring run-off.

Macleod District.—The season's work comprised one hundred and forty-six actual working days. Fifty-seven inspections and two surveys were made. Two hundred and thirty-five steam gaugings were made and data were gathered concerning sixty-one wells. The number of miles travelled by train was 830 and by motor car 5,461.

The irrigation and hydrometric work in the district were combined and the engineer was provided with a Ford motor car for transportation and with an assistant.

Special Inspections—Domestic, Municipal, Irrigation and Industrial.—This work was carried out under the immediate supervision of the office engineer. The office engineer supervises the work of all inspecting engineers and particularly that of the two special inspectors, and sees that for each trip the inspections are properly grouped, as regards economy of time, travel, expense and the urgency of an early report. The office engineer examined and checked three hundred and forty-eight plans of all descriptions including forty-six descriptions for right of way.

The total number of inspections made in Saskatchewan was seventy-five, including eleven surveys of all descriptions, involving 8,671 miles of travel by train and 1,640 miles by motor car or other means.

In Alberta, seventy-two inspections and ten surveys of all descriptions were made involving 5,918 miles of travel by train and 1,914 miles by motor car and other means.

MUNICIPAL WATER CONSUMPTION DATA.

The collection and compilation of municipal water consumption data were inaugurated towards the end of the year 1914, and in the year 1915 we received information complete for the year from fifteen cities and towns in Alberta and Saskatchewan. In the following year we received records for the whole year from the same cities and towns. During the year 1916 an endeavour was made to obtain this data from a greater number of places, with the result that for the year 1917 we received complete records from twenty-one cities and towns in Alberta and Saskatchewan. During 1918 records were received from eighteen cities and towns.

LARGE IRRIGATION PROJECTS.

Eastern Section C.P.R. Irrigation Block.

No new large construction work was undertaken during the year in this section, although considerable work was done as ordinary maintenance and in enlarging and straightening secondary canals in those districts where a large proportion of the land has been sold and occupied by settlers.

There still remains a considerable block of land in this section which has not yet been finally classified by the department and no further progress in this connection was made during the year. The company sold a great deal of land last year, and has now disposed of a large proportion of the irrigable land already classified which is close to the railways already constructed.

The year was very dry and heavy demands were made for the delivery of water in those areas already settled and under crop. The results shown at our Brooks experiment station are typical of conditions throughout this section; the dry crops were a practical failure while the irrigated lands produced excellent returns. In the Bassano colony very little water was used and the result was a general crop failure with the notable exception of one or two farmers who, by utilizing the irrigation water, produced bumper crops with splendid financial returns. In the Duchess colony, a few miles north of Brooks, a very general use was made of the water and while the lands were not all well prepared for irrigation, excellent results were obtained. In the Duke of Sutherland colony, lying just north and east of Brooks, there was also a very general use made of the irrigation water with excellent results. In this colony the settlement is older and consequently the lands are better prepared for irrigation; the results of the more thorough cultivation and preparation were apparent in the crops produced. The

company itself undertook to cultivate, seed and irrigate forty acres on each of some twenty-five ready-made farms in the St. Julien colony lying just south of Tilley. The work was started rather late in the season and under such conditions that the best results could not be expected. The lands were all sowed to some kind of grain and all produced a crop. The results were indicative of what might be accomplished during the first season by an energetic settler going on the land in the early spring. Figures submitted by the company covering the whole of this section show that 24,440 acres were irrigated during the season.

Western Section C.P.R. Irrigation Block.

No new large construction work was undertaken during the year in this section. The usual annual programme of maintenance and betterment was carried out.

The greater part of the land in this section has been sold and settled for a number of years and a large area is under cultivation—mainly in grain crops. The settlers have never made any general use of the irrigation water from year to year, and and as a consequence the land has not generally been prepared for irrigation and the smaller ditches have lacked care. When the season developed so extremely dry, many of the farmers called for water, and during the height of the irrigation season there was a very heavy demand on parts of the system. The call on the company's operation staff was very great and for a considerable time they were working "night and day" in order to meet all the demands. It is believed that the situation was handled very efficiently, and that satisfactory delivery was made to all the water users. Figures submitted by the company covering the whole of this section show that 25,191 acres were irrigated.

Canada Land and Irrigation Company.

In the spring of 1918 a considerable amount of work remained to be done before the company could carry water through its canal system to the irrigable lands. The company carried out an energetic programme during the season with a view to completing all this work. By the second week in June the system was in shape to commence delivering water to the Lake McGregor reservoir, and about June 14 the water was first turned into the canal. The remainder of the season was spent in "priming" the section of the canal between the intake and Lake McGregor. The most tedious job was priming the East Arrowwood syphon. This was completed about August 1 and about August 9 the water first reached Lake McGregor. A flow of from fifty to two hundred second-feet into the reservoir was maintained, with but few interruptions, until late in the season. At the end of the season the reservoir had been filled up nearly to the elevation of the bottom of the outlet gates at the south end.

From this point on the company did a great deal of improvement work on the very difficult section of the main canal which is located on the steep sidehill of the Little Bow river. It also completed the rather heavy cut which the main canal runs into on entering the Little Bow reservoir. At the end of the season the work on the section between Lake McGregor and the Little Bow reservoir had been practically completed so that the company should be ready to commence carrying water through this section early in 1919. From the Little Bow reservoir on to the first unit of lands to be irrigated, it is understood that the canal is all in good shape.

Speaking generally the company have completed all the large construction work contemplated for the present, and is now prepared to commence actual operation of the system. It will, however, take practically the whole of the 1919 season to complete the priming of the main canals and during this period a good many difficulties and interruptions may be expected.

The Alberta Railway and Irrigation Company.

This company is controlled and operated by the Canadian Pacific Railway Company and is commonly referred to as the C.P.R. Lethbridge Section. The city of Lethbridge is the centre to which the tract of irrigated land is tributary.

The season being extremely dry in this district, there was a very heavy demand for water—probably the heaviest in the history of this section. The St. Mary river, which is the only source of supply tapped by the company's system at this time, was practically dry below the intake of the irrigation canal during the peak load period. During this period a considerable quantity was being diverted out of the river south of the international boundary by the United States Reclamation Service canal.

While for a certain period the whole available supply in the river was being used, the supply at the intake was always sufficient to serve all of the lands under the canal. A good deal of difficulty however, was experienced in making proper deliveries of water to the farmers in the eastern end of the section and for a time some of these did not receive a proper supply. The trouble was due to certain of the company's supply canals having become silted up to such an extent that they would not carry a full supply of water. As soon as this became apparent the company's officials made strenuous efforts to overcome the difficulties, and did everything that was possible under the circumstances.

The effort to clean out the silted canals was maintained throughout the irrigation season by operating a floating dredge in the largest of the secondary canals that was affected, and later in the fall after the ditches were dry, a large amount of betterment work was carried out. The canals are now all in shape to make proper water deliveries and it is understood that the company's programme for 1919 contemplates a very considerable expenditure in general betterment work over the whole system.

Figures submitted by the company covering the whole of this section show that a total of seventy thousand acres were irrigated during the season.

Coaldale-Lethbridge Water Users Association.—This association was formed on or about July 3, 1918, with the idea of creating an organization through which the water users, under the Alberta Railway and Irrigation Company's system, could act in unison concerning all matters pertaining to irrigation. There were about seventy-five charter members all representing that part of the system lying to the east of Lethbridge in the district indicated by the name of the association.

The determination to form this association was no doubt brought to a head by the shortage of water referred to in the preceding section of this report, but the necessity of such a course had long been discussed as a means of gaining a proper distribution of the water among the farmers under this system.

The company's system was originally constructed on the old fashioned plan of providing only the main and secondary supply canals, and requiring the farmers themselves to construct and maintain all the laterals between the company's canals and the fields. Under this system there are many laterals of considerable length serving a considerable number of farmers. With one exception there was no organization among the farmers to provide for co-operative management of the laterals, and cause an equitable distribution of the necessary maintenance work or of the water. The result is the same as has always been experienced elsewhere under similar conditions. The laterals are not properly maintained, and the farmer at the tail-end of the lateral very often goes short of water. Under this condition, certain farmers suffer from a shortage of water when a sufficient quantity is being supplied to the lateral from the company's canal. The individual farmer has no means of ascertaining whether the company is making a proper delivery to the lateral or not.

On August 30, Local Union of East Lethbridge No. 141 of the United Farmers of Alberta, became interested in the same matters as were being discussed by the Coaldale-Lethbridge association and contemplated some separate organization. Finally, however,

their activities were directed along the same lines, in creating the organizations under the Alberta Irrigation District Act referred to below.

Without trying to describe the evolution of this activity in its proper sequence—the outcome of the various meetings held was a final crystallization of the farmers' views, that the requirement was an organization based on these three primaries; co-operative strength in respect of questions affecting the interest of the company and the interests of the farmers; an organization with full power to control, maintain and operate the laterals; and an organization with power to make levies of money to cover all necessary expenses. As soon as these ideas became clearly understood it was decided that the best course was the organization of water users districts under the Irrigation District Act.

The next large question was to decide on a proper division of the system for the formation of the water users districts. Certain farmers urged the formation of one large district embracing all the territory east of Lethbridge, pointing to the advantage that lay in the great weight one large association would have in discussing questions with the company. Other farmers opposed this idea on the grounds that the one large association would be too unwieldy and that possible failure under inexperienced management would wreck the whole movement. Others suggested very small districts, handling only one sub-lateral. Finally a middle course was adopted contemplating the formation of six water users districts covering the territory east of Lethbridge, each one including from twenty-five to thirty-five sections of land.

From September 1918 until January 1919, with a break in December due to the "Flu." epidemic, several organization meetings were held under the auspices of the Lethbridge-Coaldale association and with the assistance of the East Lethbridge U.F.A. Local No. 141. At the present time it is understood that all the necessary petitions have been signed calling for the formation of two of the water users districts—viz., the North Lethbridge district and the Coaldale district. Neither of these districts has as yet been formally erected under the Irrigation District Act. In the meantime, the Coaldale-Lethbridge association is acting as a mother organization which it is proposed to maintain until all the water users districts contemplated are formally erected under the Act.

In the southeast corner of the Lethbridge Section the Canadian Pacific Railway Company created a "ready-made farm" colony, comprising about five thousand nine hundred acres. This colony was practically settled in 1917 and during the past season proceeded independently of the Coaldale-Lethbridge Association to form a water users district. It was duly erected into the "Ready Made Water Users District" on February 18, 1919.

The Taber Irrigation District.—The very dry season of 1918 caused a complete crop failure in this district. The farmers all realized what a difference there would have been if their expectations concerning the construction of the irrigation ditch had been realized and the feeling became very tense. Efforts were made by the district to complete some contract with the Canadian Pacific Railway Company which would bring about immediate construction. No material progress, however, towards actual construction was made during the year.

On February 11, 1919, over four hundred farmers, a very large proportion of whom reside in the Taber district, held a meeting at Taber. An hour was devoted to a discussion of the affairs of the Taber Irrigation District, and the discussions which ensued reflected the very strong feeling under which the different speakers were labouring. The principal resolution passed unanimously by the meeting asked the Canadian Pacific Railway Company to enter into a contract with the district at such an early date that construction might be carried out during 1919, and water delivered to the land in 1920. Now that the war is over it is confidently hoped that the works for this district will be constructed during 1919.

The Lethbridge Northern Irrigation Project.—This project has been under investigation by the department since the year 1913, and full reports on the various engineering features and estimates of cost will be found in the Annual Reports on Irrigation Surveys for the years 1914-15-16.

During 1918 the president of the Lethbridge Board of Trade, suggested that the system be extended to include the greatest possible area, but that each quarter-section be limited to forty irrigable acres. The idea was to benefit a greater number of people and give each settler a water right to a sufficient acreage to ensure adequate supplies of feed for stock. It was thought that this plan would meet with the approval of the majority of the land owners, and the department was requested to make the further surveys necessary to estimate the cost on the above basis.

In October, 1918, a reconnaissance was made in the Sundial district to determine the feasibility of extending the canal system across the Little Bow river, and the suitability of the land for irrigation. A report of this work is to the effect that the extension is feasible.

From the information gained on this reconnaissance and preliminary surveys made in the Sundial district in 1914, contour township sheets were prepared, the land was classified and a canal system was projected on which to base an approximate estimate of cost.

In the Iron Springs and Monarch districts, the 1915 estimate was revised, the irrigable area being reduced to forty acres in each quarter-section, and the canal capacities reduced accordingly. The system was also extended to include the Barons and Carmangay districts as originally estimated in the 1914 report. The main canal was redesigned as to size and the location changed to include the Keho lake reservoir. The advantage in using this reservoir is that by drawing water from Keho lake for the maximum draft period of the irrigation season, the main canal from the intake to the reservoir can be reduced in capacity from 1,170 second-feet to 870 second-feet.

Three tables, constituting a summary of the estimated cost of this project, have been prepared but are not included in this report. Table I, gives the total cost of the lateral systems under each branch including the branch, and also the total irrigable area under each branch. Table II, gives an itemized summary of the cost of the main canal and structures from the intake to the division gate at the Lomond branch. The total irrigable area is 92,740 acres and the estimated cost $3,561,744 or $38.40 per acre. Table III. has been added for comparison purposes and gives an approximate estimate of cost on the same forty acre basis, but excluding the Sundial district. The total irrigable area is then 48,450 and the cost $39.50 per acre. It shows that by excluding the Sundial district, the cost is decreased $1.10 per acre.

The unit prices used were somewhat higher than those used in the 1915 estimate, but not as high as present prices. It is impossible to foretell what prices will be at some indefinite time in the future when this project may be constructed, but it is not reasonable to assume that the present abnormal economic conditions will continue for any great length of time, and hence a scale of prices has been adopted which may be expected to prevail within one or two years.

The interest taken during the winter of 1918-19 in irrigation development by the farmers in the south country is referred to more particularly in the following sections of this report. The interest was very keen indeed in the district north of the Oldman river and between Monarch and Turin. Irrigation meetings were held on February 19, 20, and 21, 1919 at Turin, Coalhurst and Monarch with respective attendances of one hundred and thirty, eighty, and seventy farmers. These meetings were all strongly in favour of irrigation with the partial exception of the meeting at Monarch where the members of a colony of Hollanders surrounding this town were opposed to irrigation development.

During the winter there was no interest displayed in irrigation development with a view to having this project extended either in the Barons-Carmangay district or in the Sundial district.

On March 27, 1919, at Lethbridge a committee representing the land owners under the Lethbridge Northern Project decided to proceed immediately to petition for the erection of the Lethbridge Northern Irrigation District under the provincial Irrigation District Act of 1915. The area to be formed into this district does not include the Sundial district or the Barons-Carmangay district. A start was made during the first week in April to circulate the necessary petitions in this respect, but it is not known at the time of writing this report whether or not the petitions have been completed and submitted to the proper provincial authorities.

The Lethbridge Southeast Irrigation District.

This project has previously been referred to as the Milk and St. Mary Rivers Project, but the name now adopted seems to give a better idea of the geographical location and is therefore more desirable. No work has been done on this project during the year, other than a new office study of the question of water supply from the several original sources which it is proposed to tap, and various incidental office studies that were made concerning special inquiries made by interested land owners in different sections under the proposed project. The great interest which developed during the past winter urging the development on the part of the land owners is described in the next section of this report.

During the winter petitions in favour of this development were received, signed by five hundred and sixty-one owners, and representing one thousand four hundred and sixty-six quarter-sections of land. This indicates the very widespread interest that developed, but must not be accepted as representing the full measure, because in many of the districts the petitions were not completely circulated.

The Irrigation Development Association.—This association was formed at Lethbridge on March 14, 1919, following the general irrigation meeting held at Lethbridge on the same day where the following resolutions were passed.

That for the proper continuance of the important work initiated at this conference of farmers and business people from the district within eighty to one hundred miles' radius of Lethbridge, there should be formed the Irrigation Development Association, with an executive as follows: chairman, vice-chairman, secretary-treasurer, and twenty-five others, with power to add to their number.

AIMS AND OBJECTS.

1. To further the use of irrigation water from our mountain streams for the stabilization of our farming operations and for the steadying from year to year of our business operations.

2. To aid in the organization of irrigation districts.

3. To maintain connections between our farmers and the Dominion Government and the Alberta Government to these ends, and to secure the assistance of these governments, financial and otherwise, for the furtherance of the work of the association.

Membership.—To be open to all interested farmers and business men on an annual membership fee of $2, of which $1.50 will be subscribed to the main association and fifty cents to each respective local association.

Meetings.—Meetings of the executive to be held not less often than once in every three months, and a general meeting at least once a year.

Central office.—The headquarters and central office of the association to be established at Lethbridge.

Local associations.—Macleod, Monarch, Barons and Carmangay, Coalhurst and Commerce, West Lethbridge, Iron Springs, Turin, Sundial, Grassy Lake, Bow Island

and Purple Springs, Taber, Barnwell, Chin, Coaldale, Foremost, Etzikom and Nemiskam, Wrentham, Stirling, Raymond, Magrath, Cardston, Glenwood and Hill Springs, Milk River, Warner, New Dayton, Masinasin, Altorado."

It will be noted from the local associations named that the membership of this association embraces all the districts which will be affected by all the new irrigation projects now contemplated in southern Alberta, namely: The Lethbridge Southeast Project, The Lethbridge Northern Project, The Taber Irrigation District, The Macleod Irrigation Project and the United Irrigation District.

The formation of the Irrigation Development Association was the outcome of a very marked movement which had taken place amongst the farmers in southern Alberta during the winter in favour of irrigation development. Several distinct projects are contemplated, but the formation of this association was for the union of all local interests for the advancement of the common interests of the south country.

During the winter, irrigation meetings were held at fifteen different points as follows, in the order in which the meetings were held. Macleod, on December 20, 1918; Raymond, Magrath, Taber, Foremost, Etzikom, Milk River, New Dayton, Turin, Coalhurst, Monarch, Bow Island, Burdett, Lethbridge and Warner on March 15, 1919. The total attendance of these meetings was over twenty-four hundred. The most conspicuous meetings were at Raymond where the attendance was three hundred; at Taber where the attendance was four hundred and fifty; and at Lethbridge where nearly four hundred and fifty delegates registered, with probably seven hundred in attendance at some time during the all-day meeting.

The question must naturally arise, what was the reason for this very marked movement? This question can best be answered by recalling that over practically all of the country affected by the contemplated developments there was a very lean crop in 1917 and a crop failure in 1918—both due entirely to drought. In the same districts the past ten years have produced only three good crops, due to the same cause. Then the moral effect of the great war and the national call to the farmers for greater production, caused most men to take stock of their surroundings.

LETHBRIDGE EXPERIMENTAL STATION.

Comparative results of Crops grown on Dry and Irrigated Land.
Yield in bushels per acre.

	1908.		1909		1910.		1911.		1912.		1913.		1914	
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Wheat—Marquis	29	43	31	40	11	23	Hailed.		28	50	25	52	24	54
Oats—Banner	80	88	56	77	21	68	Hailed.		77	145	73	115	49	113
Barley—Swedish Chevalier	55	61	44	69	12	54	Hailed.		41	77	50	93	25	90
Peas—All Varieties	19	19	19	19	12	33	23	39	41	62	31	42	19	52
Potatoes—Irish Cobbler	92	235	159	605	103	521	356	568	296	501	195	483	400	495

	1915.		1916.		1917.		1918.		Average.		Increase due to Irrigation.	
	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Bushels.	%
Wheat—Marquis	63	94	48	71	28	48	14	62	30	53	23	77
Oats—Banner	143	81	118	157	56	128	24	104	70	108	38	54
Barley—Swedish Chevalier	86	80	64	79	40	82	17	91	43	78	35	81
Peas—All Varieties	53	50	46	37	23	48	16	48	27	41	14	51
Potatoes—Irish Cobbler	283	447	475	530	157	465	93	505	237	487	250	105

Think of these conditions, and then read the story told to the farmers by W. H. Fairfield of the Dominion Government Experimental Station at Lethbridge, and see the chart which he exhibited to them.

Quoting Mr. Fairfield very briefly, he explained the chart above as follows:—

"The experimental farm is bisected by an irrigation ditch so that a part of the farm is above the ditch and is dry farmed and a part is below the ditch and is irrigated. The figures shown in the chart have been very carefully selected showing the actual results gained during the past eleven years on crops where the only difference was between dry land and irrigated land. There was no special attempt made to get results that would show the difference between dry land and irrigated land—the aim was to develop methods for gaining the best results, both on dry and on irrigated land. The crops were grown on small plots under very special cultivation, so that all the yields are probably higher than produced on the average farm—but the difference between the yields should be the same as on an ordinary farm. The last column speaks for itself in showing the average increase over eleven years—some wet and some dry—due to irrigation. And further all the dry crops were produced on summer-fallow which requires that for every acre producing a crop in any year, another acre is lying fallow. The irrigated land produced a crop under rotation, every year. Therefore to get a true comparison between the dry and the irrigated land the figures in the last column should all be doubled. And again, the chart makes no mention of alfalfa or the hay crops which are, perhaps, the most profitable of all on the irrigated lands. There can be no comparison made, because neither alfalfa nor dry grasses can be grown commercially on dry land. The average farmer in the Coaldale district (east of Lethbridge) on irrigated land produces about three and one-half tons of alfalfa per acre each year."

Macleod Irrigation Project.

This project was previously surveyed with reference to some nine thousand five hundred irrigable acres lying directly south of Macleod and a report was submitted in 1916-17. The active interest in irrigation during the winter included the land owners in the strip of smooth country south of Macleod between the rough breaks of the "Ridge Between the Rivers" and the Waterton and Belly rivers, and running to a point near Ewelme.

The irrigation of this new area contemplates a diversion from the Waterton river, either direct or through the works of the United Irrigation District. A very brief reconnaissance was made in the field during the winter in this connection, and it is probable that a direct diversion would be very difficult and expensive. It has also been stated that it is feasible to tap the Oldman river at Brocket, run down to a mile south of Chokio and then by taking advantage of a depression in the country, bring a canal through the Ridge Between the Rivers, and thus command all of the irrigable area lying to the south of Macleod. We have not as yet made any reconnaissance to test the feasibility of this route.

During the winter approximately one-third of the land owners who would come under the proposed canals signed petitions in favour of irrigation development.

Magrath-Raymond-Stirling Irrigation District.

The organization meeting for this district was held at Raymond on February 15, 1919. It was attended by representative men from Raymond and Magrath.

The feeling of the people in this district is this: They are keenly interested in the early development of the complete Lethbridge Southeast project and will do everything in their power to forward this project. On the other hand, they are crying for more irrigation water, and lest the complete project be not constructed in the near

future, they have decided to organize now so that they will be prepared to carry on such construction as will allow of the irrigation of every acre in the district that is not now being served by the Alberta Railway and Irrigation Company's canal.

Reference to the map showing the second system of canals accompanying the report in 1915 on the Milk and St. Mary project will show tracts 1 B and 4 lying above the present Alberta Railway and Irrigation Company canal, with irrigable areas of 4,096 acres and 6,770 acres respectively. And further, there are shown tracts 1A and 2 containing 20,440 irrigable acres and 31,700 irrigable acres respectively, wherein only a small portion of the irrigable areas are at present supplied from the Alberta Railway and Irrigation Company canal. The idea of the formation of the irrigation district is to provide for the irrigation of the irrigable lands lying above the Alberta Railway and Irrigation Company canal, and also to supply the irrigable land lying below the canal, which is not at present supplied and for which land no water rights can be obtained by the farmers at the present time from the Alberta Railway and Irrigation Company.

The owners of practically all the land in this district have already petitioned for the development of the Lethbridge Southeast project, and the great majority are no doubt in favour of further irrigation development. Up to the time of writing this report the irrigation district has not been formally erected, and it is not known whether the special petitions required have been signed and submitted.

The United Irrigation District.

The lands which comprise this proposed district lie between the Belly and the Waterton rivers and originally comprised the old Cochrane ranch. They are now owned by the Alberta Stake of Zion (Morman Church) which purchased the land and then colonized it.

In July, 1906, the Alberta Stake of Zion made application for the irrigation of this district but at that time contemplated a water supply from the Waterton river. After making surveys and estimates of the project the scheme was dropped on account of the high cost of diverting the water from the Waterton river. In March, 1919, the Alberta Stake made a new application on behalf of the United Irrigation District, contemplating a water supply from the Belly river. No final plans are available as yet, but it is known that the diversion from this source will be very cheap, as in fact will be the whole project as now contemplated.

The lands affected comprise a total area of about 67,500 acres. At the time of writing this report the necessary petition for the erection of the Irrigation District has been circulated and very largely signed but the district has not yet been formerly erected.

DUTY OF WATER AND IRRIGATED CROP REPORTS FOR 1918.

The study of the question of the proper duty of water requires the collection of a great deal of detailed information and then a very careful study of all the data available. The report submitted for separate publication contains all the most interesting data in condensed form. This summary report merely outlines the scope of the work and notes the conclusions arrived at tentatively at this time.

Work was continued at the Strathmore demonstration station, but owing to the shortage of help it was not found possible to keep a record of the water applied but only of the crops produced. Experimental plot work was carried on this year for the first time at Brooks and was continued as during the past years at Ronalane. Data regarding the duty of water were collected at Coaldale and irrigated crop reports were submitted by the inspecting engineers for the Cypress Hills district, mainly in Saskatchewan, and for the Macleod district in Alberta.

DISCUSSION OF SUMMARIZED DATA.

The natural precipitation varies greatly from year to year and directly affects the duty of water. In dry years a greater depth of irrigation is required than in wet years. The clearest way to view the matter is to consider both natural precipitation and irrigation water simply as so much depth of water applied to the crops. Then by adding together natural precipitation and irrigation water to get the total depth of water applied and thus have a figure which is readily comparable from year to year. This latter statement must not be accepted absolutely, because the seasonal distribution of the precipitation and temperature also has a marked effect on the crop growth. It must always be kept in mind that soil and subsoil conditions have a very marked effect on the duty of water, so that in comparing results gained at different places many conditions must be considered to get a true perspective.

In previous reports attention has been drawn to the difficulty of drawing definite conclusions from the data available. In work of this nature where results vary from year to year, it is necessary to have them tabulated consecutively over a considerable period before definite conclusions can be drawn. Instead of waiting until the end of the period before publishing results, it has been thought better to publish the data annually and also such conclusions as could be drawn from them. Previously it has been the practice to summarize the results gained in a short statement regarding each crop. As the period of years to which reference has to be made lengthens, this method becomes more and more difficult and is apt to be confusing. In this report the data have all been summarized in the table below, which it is thought shows correctly the average of all results gained to date. The column Crop is inserted as a useful index to the results gained at the different places. The column Depth shows the total of water received in feet (irrigation plus precipitation). The average depth shown is the average of the depths at the different places according to the number of years records. The column marked 1-4 shows the average for the four places, and the column marked 2-4 shows the average for Coaldale, Ronalane and Brooks only. The results at Strathmore are based on plot work carried on for five years, but owing to several causes the crop data cover only from one to four years records. The data at Coaldale are based on results gained by average farmers irrigating their own fields over a period of six years. The crops at Coaldale have been omitted because they would not be comparable with the crops grown on the small plots.

The results at Ronalane are based on plot work carried on consistently for four years and constitute the most reliable data available at the present time. The results at Brooks are based on plot work, but cover the year 1918 only. For Strathmore, Ronalane and Brooks the figures shown are the average, at each place, of the total depths of water producing the best crop in each year; for Coaldale the figures represent the average of ordinary crops in each year.

	1. Strathmore.		2. Coaldale.		3. Ronalane.		4. Brooks.		1-4	2-4
	Crop.	Depth.	Crop.	Depth.	Crop.	Depth.	Crop.	Depth.	Average Depth.	Average Depth.
	Bush.		Bush.		Bush.		Bush.			
Wheat	45	1·36	. . .	1·53	46	1·89	45	2·01	1·62	1·72
Oats	133	1·30	.....	1·61	95	2·17	104	1·90	1·69	1 86
Barley	36	1·17	.....	1·57	61	1·63	74	1·85	1·54	1·63
Peas	28	1·06	.....	.....	49	2·22	48	2·09	1 87	2 19
Potatoes	447	1.22	....	.....	391	2·07	312	2·29	1·82	2·12
	Tons.				Tons.		Tons.			
Alfalfa	4·26	1·40	...	2·27	3·36	2 05	...	.....	2 05	2 18
Grasses	2·00	1·23	....	2·02	...	.....	.... .	.....	1 67	2·02
Sugar Beets	....	.....	.....	.....	14·0	1·65	...	. . . ...	1·65	1·65

In our opinion column 2-4 indicates quite closely the total depths required for the various crops in the part of Alberta south of township twenty-eight and exclusive of the strip influenced by proximity to the foothills and latitude, which might be generally described as the territory lying west of range twenty-three. The Strathmore column, while being less reliable, indicates the smaller quantities of water required in the territory lying west of range twenty-three. If this opinion is correct the figures in column 2-4 will be representative for the great bulk of all the irrigable land in Alberta.

If we assume that ultimately all irrigated farms will be one-half sown down to alfalfa and one-half cropped to one of the common grains, we are assuming a condition that represents a high water requirement and a sound system of crop rotation. The average depth from column 2-4 for wheat, oats and barley is 1·70 feet. For alfalfa the depth is 2·18 feet. Under the conditions assumed, the total depth required for the whole area would be the mean of these two figures, or 1·94 feet. Under this condition with the legal duty of 1·50 feet we must rely upon a precipitaion of 0·44 foot (about 5¼ inches) to meet the crop requirements.

The season of 1918 probably as dry a season as has ever been exprieneed in Alberta, and the average precipitation from April to September for Coaldale, Ronalane and Brooks was 0·36 foot or 4½ inches. The average long term precipitation for this season at Medicine Hat and Lethbridge is 0·86 foot or 10¼ inches.

PART V

WATER POWER

WATER POWER.

REPORT OF THE DIRECTOR OF WATER-POWER.

J. B. CHALLIES, C.E. (Tor.), M.E.I.C.

The following report, with the attached report of J. T. Johnston, B.A.Sc., M.E.I.C., Assistant Director, concerns the activities of the Dominion Water Power Branch for the fiscal year ending March 31, 1919.

In the report for last year, special attention was called to the importance of water-power in commerce and industry in all civilized countries and the necessity of co-ordinating water-power with power from other sources in order that every section of the country should be adequately supplied with cheap and dependable power for its industrial, municipal and social requirements.

The past year has been exceedingly fruitful, several important steps have been taken towards the establishment of a uniform power policy for the whole of Canada which give every evidence of being merely the initial steps in a very definite advance. The first of these in order of importance was the establishment of the Dominion Power Board.

Dominion Power Board.

In the report of last year, it was pointed out the desirability of forming a board of government officials to correlate data and evolve a master power policy applicable to all parts of the Dominion. The Dominion Power Board was constituted by Order in Council of April 25, 1918, which specified its duties and nominated its personnel: under the chairmanship of the Honourable the Minister of the Interior, the Board was subsequently added to.

Water Resources Conference.

A conference was held at Ottawa on January 16 and 17 and was attended by members of the Power Board, by representatives of the Dominion and Provincial Governments, and independent authorities on water resources. During this conference a valuable exchange of views was secured on several important subjects. At the first session the Water Resources Index-Inventory system of filing and recording water resources data, as worked out and adopted by the Dominion Water Power Branch, was fully explained to the conference, and a resolution was passed recommending that all federal and provincial organizations adopt the system and that to this end a suitable explanation of the system, accompanied by maps, diagrams, etc., be published for general distribution.

The question of standardization of method, co-ordination of survey work and publication of results in hydrometric work was next discussed. The material for discussion was too extensive to allow this conference to adequately deal with the matter; a resolution was therefore passed calling for two territorial conferences, one for the East and the other for the West, with a subsequent conference at Ottawa under the auspices of the Dominion Power Board to co-ordinate the conclusions of the two territorial conferences and work out a standard practice for hydrometric work for the whole Dominion.

The last two sessions of the conference were mainly devoted to the discussion of water-power regulations with special reference to the more contentious features, such as the nature of franchise, termination of license, compensation, rental, control of stock and bond issues. A very valuable exchange of views resulted and it was arranged that lists of leases, federal and provincial, with information as to the main provisions be furnished to the secretary of the Power Board for collation and distribution. It was also decided to request that the Dominion Water Power Branch continue its research into administrative measures in connection with water-power resources in foreign countries and make available the results of this research to the various Canadian administrative officers.

Amongst the gentlemen attending the conference the opinion appeared to be unanimous that a very definite step forward had been taken towards closer co-operation throughout the Dominion in the investigation, study and administration of Canada's important water resources.

The Order in Council constituting the Dominion Power Board provided that at the request of the board, concurred in by the chairman, the head of any department might attach an officer of his department to the board to be placed under its direction. Under this authority the transfer of two engineers to the board was secured.

WATER-POWER BILL.

It was found that the legislation governing the administration of Dominion water-powers, comprised in section 35 of the Dominion Lands Act, was in many respects inadequate and needed enlarging to give more precise definition in order to afford unquestioned authority for the regulations which were under consideration. Therefore a Bill was prepared for the repeal of the above-mentioned section and for the substitution of a complete Dominion Water Power Act which should govern the administration of all water-powers under the control and management of the Minister of the Interior.

WATER-POWER REGULATIONS AND LEGAL RESEARCH.

During the past few years an extensive study has been made in the branch of water-power legislation and administration in foreign and other British jurisdictions with a view to perfecting our own legislative and regulative policy.

In the year 1916, a preliminary draft of regulations was prepared as a basis of discussion. This draft was subjected to the criticisms of many persons who were thought to be particularly well qualified to pass upon the subject, and has been amended from time to time in keeping with such suggestions as appear to be justified.

At the same time, many translations were made of foreign laws and regulations relating to water-power, including those of France, Switzerland, Spain, Italy, Sweden and Norway. It was found that the situation existing in each of these countries, as well as in the United States, with respect to water-power administrative and legislative problems was closely similar, the legislation in every case being in a formative state and undergoing far-reaching changes at the present time. All this material was closely studied. The corresponding sections dealing with any particular subject as well as the views of our critics, were segregated and set out for the purpose of comparison in a comprehensive report, including a thorough review of such subjects as: Procedure on Applications, Publicity and Local Hearings, Nature of Initial Grant and Extent of Minister's Discretion, Measures for Securing Prompt Construction, Time for Executing Binding Grant, Nature of Final License or Franchise, Length of License Term, Renewal Provisions, Compensation to be Paid for Works if Taken over at the end of the term, Compensation for Private Lands taken over, Rentals payable to the Crown, Power Output Clauses, Power Sale Clauses, Stream Regulation and Control, Appraisal and Accounts, Rates to Consumers, Non-capitalization of Grants, Transfers and Penalty Clauses.

In the summer and fall of last year, the officers of the Dominion Water Power Branch held a series of conferences taking this report as a basis and suggesting amendments to the proposed regulations. This work is now well under way and should result in producing an exemplary set of regulations.

The drafting of the water-power Bill and the extensive legal and other research necessary to the consideration of the question of water-power regulations was undertaken mainly by the legal adviser of the branch.

DOMINION HYDROMETRIC SURVEY.

The importance of Canadian water-powers is so great, and reliable and hydrometric data for their proper exploitation so imperative that it has become obvious that co-ordination of effort in hydrometric survey for the whole Dominion is necessary.

Probably the most efficient, effective and relatively inexpensive method at achieving this result would be by authorizing the Department of the Interior to enter into co-operative agreements with the various provinces of the Dominion who already control their own resources. Certain of the provinces have already expressed a desire for such an understanding. Under a series of such agreements, it would be possible to gradually expand the hydrometric survey operations at present carried on by the Dominion Water Power Branch so as to cover the whole of Canada, and thereby achieve a co-ordination of effort, a uniformity of method and a standardization and completeness of results for publication unobtainable by the present piecemeal methods.

LAKE OF THE WOODS CONTROL BOARD.

This Board was recently established, but decided to await the passing of the spring flood season before assuming active control. The conditions maintaining in the Lake of the Woods basin during the past year is reviewed in Mr. Johnston's report.

BRITISH COLUMBIA WATER LANDS REGULATIONS.

In the Railway Belt in British Columbia the waters which belong to the Dominion are administered by the provincial authorities under their water Acts, and in order to enable those who have been granted water privileges in the province to have access to the Dominion lands which are required by them in the exercise of their rights, certain regulations, known as the British Columbia Water-lands Regulations, were passed by Order in Council in June, 1918, having that end in view.

These regulations and the forms which have been prepared for use in making them effective were framed after consulting all interested officials, and it is confidently expected that applications for lands required in connection with the development of water privileges will be dealt with uniformly and more promptly than was possible under the previous regulations, which were defective in this respect.

In order to secure the best results in dealing with this complicated question it is necessary to effect constructive co-operation between the officials of this Department and of the staff of the Provincial Comptroller of Water Rights, and it is gratifying to be able to state that a complete agreement has been reached.

COSTS OF HYDROMETRIC AND WATER-POWER SURVEYS.

In March, 1914, a conference of the accountants of the branch was held at Winnipeg, with a view to co-ordinating the methods of accounting for the expenditures of money voted by Parliament and arranging a uniform cost-keeping system for use in the several offices of the branch. In so far as the accounts themselves are concerned, it may be stated that these are being uniformly rendered by each of the offices of the

branch. Very considerable headway has also been made in the direction of the keeping of cost data and the reporting of these data to the head office at Ottawa. More especially is this true in so far as the operations of the branch in the province of Manitoba are concerned, while considerable progress has been made covering the operations in British Columbia.

The information contained in this cost analysis of the expenditures of the branch, enables us to determine the cost of each survey made, the capital cost of establishing each gauging and metering station and the cost of maintaining these stations. It also enables us to compare the cost of each measurement made at the various stations.

It is the desire and intention that these methods will be extended to all the activities of the branch in whatever section of the country they are being carried on.

Attached hereto is the report of Mr. J. T. Johnston, Assistant Director, who indicates in detail the activities of this branch during the past year, amongst which may be mentioned the research that is being carried on regarding the utilization of off-peak power. Another feature of the past year's work made clear in this report is the progress in co-operation with various administrative bodies charged with water resources investigation and control. This feature is of such great importance that it is really entitled to more than the only passing reference possible to give here. The extent to which co-operation is effective may be partially realized from the list of Dominion and provincial bodies with whom it is carried on, namely, the Dominion Bureau of Statistics, the Reclamation Service of this Department, the British Columbia Water Rights Branch, the Hydro-Electric Power Commission of Ontario, the Quebec Streams Commission, the New Brunswick Water Power Commission, and the Nova Scotia Water Power Commission.

Report of the Assistant Director.

J. T. JOHNSTON, B.A.Sc. C.E., M.E.I.C.

HYDROMETRIC SURVEYS.

Regular stream-measurement operations have been carried on throughout the year in the provinces of British Columbia, Manitoba and Nova Scotia, while early in August last new work was instituted in the province of New Brunswick under conditions similar to those in force in the province of Nova Scotia. Owing to war conditions and depleted staffs, there was little opportunity of enlarging the scope of the regular work and attention was given to maintaining in operation the most essential established stations. Under these circumstances it is considered that a very satisfactory season's work has been accomplished.

Special efforts were made to secure records of stream flow in outlying districts where prospective development work indicated their necessity. In this connection additional winter measurements were secured in the Flin Flon mining district in North Saskatchewan through co-operation with the Reclamation Service.

In the interests of war-time economy the Hydrometric Survey reports for British Columbia and for Manitoba for the climatic year ending September 30, 1917, were temporarily withheld from publication. These reports are now being combined with the subsequent year's records and will be published in due course. The climatic year is being adopted in all our stream measurement publications in conformity with the decision reached at a conference held in Winnipeg last year between representatives of the Reclamation Service and of this branch. The province of Ontario will also adopt the climatic year for the publication of stream measurement data.

BRITISH COLUMBIA HYDROMETRIC SURVEY.

Activities of the British Columbia Hydrometric Survey have been continued under the direction of Mr. R. G. Swan as chief engineer in co-operation with the provincial authorities along the lines outlined in previous reports.

Owing to a depleted staff, operations were confined to the southern or more thickly settled portions of the province. The investigations in the Fort George district were again postponed but the future development of the northern districts will require the resumption of stream measurement work as soon as conditions become normal.

Numerous engineering investigations and reports have been made by Mr. Swan's staff for other Dominion Government departments which are without engineering staffs in British Columbia. The Department of Indian Affairs appointed Mr. Swan early in 1918 as technical adviser to assist in the proper establishment of water rights appurtenant to Indian reserves throughout British Columbia and in engineering matters arising from the use of these water rights. Field work in this connection was energetically carried on and information acquired regarding irrigated and irrigable areas, storage reservoirs, etc., for 18 reserves in the Lytton Agency. Supervision was given to the installation of a pumping plant for the Kamloops Industrial School and a complete survey made of that part of Kamloops Indian reserve adjacent to the North and South Thompson rivers. Attention was also given to numerous applications received by the Dominion Lands Branch for the purchase or lease of lands in the province.

The stream measurement records for the two climatic years ending September 30, 1917 and 1918, are being published as Water Resources Paper No. 23. The report is available for free distribution to all interested in problems of run-off of the rivers in British Columbia.

MANITOBA HYDROMETRIC SURVEY.

The stream measurement work throughout the province of Manitoba has been continued throughout the year under Mr. M. C. Hendry, as chief engineer.

The operations of the Manitoba organization have been greatly hampered by the smallness of staff available due to war conditions and the work has been largely confined to stations already established. Every effort has been made to maintain the regular stations which are of primary importance to the general questions of water-power, water supply and reclamation throughout the province. In addition to this a study of run-off conditions was made in the northeastern part of the province. Several new stations were established in the southern part of the province at the request of the Provincial Department of Public Works. The information was required in connection with certain drainage problems.

The intensive study which has been carried on during the past few years at the outlets of the lake of the Woods has been continued during the year and a continuous oversight has been maintained over all the conflicting aspects of the lake of the Woods regulation. In view of the vast importance of the lake of the Woods storage to power interests on the Winnipeg river in Manitoba, it is essential that this work should receive continuous and intensive study.

The stream measurement records for the two climatic years ending September 30, 1917 and 1918 are being published as Water Resources Paper No. 24. The report is available for free distribution to all interested in problems affected by the run-off of rivers in the province of Manitoba.

NEW BRUNSWICK HYDROMETRIC SURVEY.

In May, 1918, the province of New Brunswick entered into an agreement with the Department of the Interior looking to the co-operative investigation of the water-

power resources of the province. In conformity with this agreement the province appointed the New Brunswick Water Power Commission with authority to act with the Dominion Water Power Branch.

The field investigatory work was incorporated with the similar work under way for some years in Nova Scotia under the direction of Mr. K. H. Smith, as district engineer, and the collection of fundamental hydrometric data was immediately arranged for.

Systematic and regular work was begun in August and regular stream measurement stations were established on the following streams: Dana river, Kennebecasis river, Lepreaux river, Madawaska river, Magaguadavic river, Miramichi river, Mispic river, Nashwaak river, Nipisguit river, Shogomac river, St. John river, Tobique river and Upsaliquitch river.

The work has proceeded aggressively to date and plans for its further development are now under way.

Nova Scotia Hydrometric Survey.—Hydrometric work has been continued with satisfactory results in the province of Nova Scotia throughout the year under the co-operative agreement between the Nova Scotia Water Power Commission and the department. The work in conjunction with the New Brunswick work is under the direction of Mr. K. H. Smith, of this department as district engineer.

Stream flow records were obtained during the year at some twenty-five regular stations and co-operation with the Canadian Meteorological Service was continued in the maintenance of precipitation and evaporation stations. The reduction of staff owing to enlistments for overseas service necessitated some curtailment of the work.

POWER AND STORAGE SURVEYS.

Power investigatory work in the field was very largely curtailed during the year, with the exception of special surveys or inspections required for pressing problems. Exhaustive office studies have been made into various power questions and into the water-power interests of the Dominion as a whole.

British Columbia.—Owing to depleted staff no field investigatory power and storage work was undertaken in British Columbia during the past year. Power work was practically confined to fundamental stream measurement operations.

Alberta and Saskatchewan.—No field investigation work was attempted in the provinces of Alberta and Saskatchewan during the past year. The entire available power data in the two provinces was, however, re-analysed and co-ordinated to conform with the principles of the water resources inventory scheme, and the results compiled into comprehensive reports covering the two provinces. A great amount of additional field reconnaissance work is still necessary before the water-power resources of the two provinces are fully and satisfactorily analysed.

Manitoba.—While power investigatory work in Manitoba was considerably curtailed during the year owing to lack of staff, a special effort was made to have the office records analysed and co-ordinated with the water resources inventory scheme. This was satisfactorily completed.

An inspection of Meadow Portage was made by the chief engineer, in connection with the study of the power possibilities at that point. Additional information was gathered by one of the staff to supplement that already on hand and a report prepared covering the situation.

The reconnaissance survey of the Barens river made in 1914 up as far as Family lake was further extended in July and August, 1918, to take in Fishing lake. A survey of this lake was made to determine to what level it might be raised to benefit the head at the proposed power site of Little Grand rapids.

Supervision was continued over the alterations to the plant of the Winnipeg Electric Railway Company on the Pinawa channel of the Winnipeg river. The work was considerably hampered by lack of suitable labour and remained unfinished at the close of the season. Additions to the plant of the city of Winnipeg at Point du Bois were completed and a new unit put in operation under supervision of the department. Mr. W. J. Ireland, assistant chief engineer to Mr. Hendry, has acted as inspecting engineer in the above two instances in addition to his other duties.

Power applications on the Hole river renders an examination of the stream necessary during the forthcoming season. If at all possible, power survey work should be inaugurated on the Nelson river. The line of check levels from Lac du Bonnet to Kenora should also be run at the earliest feasible date. Whether this work can be undertaken during the present season will depend on the staff available.

New Brunswick.—In accordance with the terms of the co-operative agreement between the Department and the province of New Brunswick referred to in the foregoing, reconnaissance power investigations have been made of the Mispec, Shogomoc, Charlo and Nipisguit rivers as well as portions of the Lepreaux, Magoguadavic, Tobique and Madawaska rivers. On the Pokiok river sufficient surveys and storage investigations have been completed to enable a power report to be made as soon as sufficient run-off records are available. Storage surveys and investigations have been completed on the Tetagouche river but a profile survey of the lower portion of the river as well as run-off records covering a more extended period are necessary before any reliable power estimates can be made

Systematic power investigatory work will proceed under the direction of Mr. K. H. Smith as rapidly as funds and staff will permit.

Nova Scotia.—Owing to a depleted staff due to war conditions no extensive power surveys were undertaken in the province of Nova Scotia during the past year. Only these investigations were undertaken for which specific requests were made. Full co-operation was maintained at all times with the Nova Scotia Water Power Commission.

Surveys were carried out under Mr. Smith's direction on South river, Antigonish at Fraser Mills; on the upper waters of the Musquodoboit river in the vicinity of Mill lakes; at Grand river falls in Richmond county, Cape Breton and in connection with a proposed power development of considerable magnitude involving the diversion of lake Ainslie, Inverness county, C.B. A general description of each of these power sites with the results of the investigations made was prepared and is given in the 1918 report of the commission, copies of which may be secured upon application to the secretary.

CO-OPERATION WITH THE PROVINCE OF ONTARIO AND PRINCE EDWARD ISLAND.

In January of the present year the Hydro-Electric Power Commission of the province of Ontario intimated that the commission would be agreeable to a co-operative investigation of the water-power resources of the province. The basic principles of this agreement involved the Dominion assuming responsibility for all hydrometric survey and fundamental investigatory work while the commission assumed responsibility for all special power studies. Negotiations along these lines have been under way for some time and it is expected that within a short period a mutually satisfactory agreement will be drawn up and executed.

In February last an intimation was received from the Premier of Prince Edward Island that that province would welcome a water resources investigation under the auspices of the Dominion Water Power Branch similar to the investigations under way in the provinces of New Brunswick and Nova Scotia. Arrangements were accordingly made for the inclusion of Prince Edward Island with the investigatory work under way in the Maritime provinces.

CO-ORDINATION OF MARITIME PROVINCES INVESTIGATORY WORK.

In February a joint communication was received from the Premiers of Nova Scotia and New Brunswick urging that the Federal Government assume full responsibility for the fundamental power investigatory work under way in the respective provinces. Interests of economy and efficiency called for the co-ordination of the work in Nova Scotia, New Brunswick and Prince Edward Island, and made it desirable to revise the previously existing agreements with the Nova Scotia and New Brunswick authorities and to include also Prince Edward Island. Accordingly a co-operative agreement between the Dominion Government on one hand and the provinces of Nova Scotia, New Brunswick and Prince Edward Island on the other is at the present time being worked out. The basic principles of this agreement involve the Federal Government assuming responsibility for all hydrometric survey and fundamental water-power investigatory work, while the provincial governments assume the responsibility for all special power studies. It is anticipated that this agreement will be executed in the near future.

DOMINION LAND SURVEYS AND RECLAMATION.

Dominion land survey and reclamation work as it affects the administration of water-powers was carried on throughout the year under the direction of Mr. T. H. Dunn, D.L.S.

At the request of the Department of Indian Affairs an inspection of Pemberton Meadows at the head of Lillooet lake was made in company with Mr. R. G. Swan, Chief Engineer of the British Columbia Hydrometric Survey. Indian lands in this district are subject to flooding due to the insufficient size of the outlet of Lillooet lake to pass the freshet flow. Estimates of cost and recommendations of the best methods of reclaiming these flooded lands were made.

An inspection of Meadow portage connecting lakes Winnipegosis and Manitoba in the province of Manitoba was made in company with Mr. M. C. Hendry, Chief Engineer of the Manitoba Hydrometric Survey. Estimates of cost and the feasibility of excavating a canal connecting these two lakes for reclamation and water-power purposes were made.

The question of flooded lands along the Winnipeg river in connection with the developed and undeveloped power sites was thoroughly revised preparatory to undertaking the field work necessary to properly safeguard the interests of power and of the settlers. Mr. Dunn will cover the most contentious reaches during the forthcoming season.

LAKE OF THE WOODS REGULATION.

The control of the regulation of the Lake of the Woods has been continued as outlined in previous annual reports pending the adoption by the Canadian and United States Governments of the recommendations made by the International Joint Commission in respect to the Lake of the Woods Reference. The arrangement made in September 1916, between this office and the Department of Public Works of the Province of Ontario, whereby this Branch would advise the Ontario authorities as to the operation of the Norman dam, have worked out satisfactorily. Systematic records are received daily and weekly from various points throughout the watershed covering meteorological and run-off conditions. Based upon a study of this data and of general conditions maintaining throughout all portions of the basin, recommendations are made to the Ontario authorities as to the operation of the dam.

A review of the conditions which have been maintained on the lake since advice as to the control was made the responsibility of the Dominion Water Power Branch,

compared with the conditions which maintained on the lake in preceding years will indicate the benefits accruing from a regulation which gives full consideration to not only all interests directly affected but also to all meteorological and storage conditions developing or maintaining throughout the watershed. Prior to this supervised control the lake level had varied in elevation through a range of eight or more feet. Low level upon the lake had at times most seriously interfered with navigation and the operation of power plants upon the lake outlets. Abnormal flood elevations had on the other hand caused great damage to foreshore interests, in both Canada and the United States. Since the present arrangement has been in operation, *i.e.*, from September, 1916 to date, a most equitable regulation has been maintained. During the year 1917 the extreme variation of the lake level, ignoring wind effects, was 1·2 feet. During the year 1918, the extreme variation of level, ignoring wind effects was 0·9 feet. During both navigable seasons, ideal navigation conditions were maintained on the lake, while an ample reserve of stored water was at all times available for power or navigation uses in anticipation of a prolonged dry period. In brief, the regulation on the lake has been very carefuly maintained in the best interests of all affected.

During the present season steps have already been taken at the dam in anticipation of the spring inflow and all necessary preparations have been made to satisfactorily handle any flood inflow which is to be anticipated.

In accordance with the recommendations of the International Joint Commission, a Lake of the Woods Control Board, consisting of four qualified civil engineers, two to represent the Dominion of Canada and two to represent the province of Ontario, was appointed by Order in Council dated January 21, 1919. This Board will henceforth assume the responsibility of regulating the Norman dam and controlling the surface levels of and the outflow from the Lake of the Woods.

RESEARCH INTO UTILIZATION OF OFF-PEAK POWER.

For some years past this department has been interested in the increased industrial use of the off-peak power available in practically all central stations throughout the Dominion. Any means whereby this idle power may be put to advantageous use will be a boon to the central station industry but more so to the country as a whole. Particularly is this the case in Canada where ninety per cent of the central station industry is based upon water power. Actual research in this connection has been under way for the past few years in co-operation with one of the larger power companies. The results have been so satisfactory to date that arrangements are now under way to have the work carried on under the sole direction of the Department.

WATER RESOURCES INVENTORY.

The general water resources index inventory referred to in previous annual reports has been broadly developed during the past year. The system offers a method of filing, recording and analysing water resources data which meets the requirements of practically any organization interested in water resources administration or investigation.

The multiplicity of organizations, Dominion and Provincial, engaged in securing water resources data for various governmental purposes, often without co-ordination in either field or office systems, has resulted in a great variety of methods both for filing such data and for making it available for general use. Consequently, it has long been apparent that some universally adoptable scheme for indexing and filing water resources data will be exceedingly valuable, a condition that will be all the more evident when one considers not only the increasing amount of water resources investigation being carried on but also the complexity and interrelation of the data so obtained. In view of the above, a filing system which has been named a "Water Resources Index Inventory," has been developed by the Dominion Water Power Branch, and at a

Water Resources Conference recently held under the auspices of the Dominion Power Board, a body charged with the responsibility of co-relating and systematizing available information respecting the water-power and fuel-power resources of Canada, was adopted by that Board, and recommended for publication.

This system has accordingly been proffered by the Board to any and all interested as a method of filing and recording water resources data that it is hoped will meet the requirements of, and be found of help to, any organization interested in that subject. Moreover, through its provision of a uniform indexing basis, it will much facilitate the interchange of water resources information among all those interested therein, and the co-relating of the efforts of all those engaged in water resources research, development, and control, with a corresponding increase in the value of their individual results and the usefulness of the data which they may compile.

The characteristics of the data which are essential to the proper consideration and analysis of water resources are so varied that a purely alphabetical index becomes cumbersome and unworkable. The same may be said of a topic index developed solely on the topic basis.

A filing system for water resources information should combine graphical with analytical features, and should become an index to, as well as an inventory of, water resources data. To secure a comprehensive grasp of a water-power situation, such information as the location of water-power sites, water-power developments, storage reservoirs, stream measurement stations, meteorological stations, etc., must be graphically recorded so that the entire situation is visualized. In conjunction with this graphical representation, an alphabetic or topic index is essential.

In brief, the system involves the division of the Dominion into suitably sized areas based on the drainage basins, and the filing of the water resources data for these various areas under suitable topic headings. The filing system assumes that the operator is acquainted with the location of the district or territory in which he is interested. The general key map shows the index number of the subdivision in question, and the available data in that region is automatically brought to hand by referring to the topic reference cards of the subdivision. A cross index of river, lake or place names with the index divisions is a convenience which may be developed as the necessity arises in the application of the system.

The fact that water resources information in general is based upon, and may be advantageously tied in to, watershed areas, suggested the adoption of a graphical index based upon drainage areas rather than upon arbitrary divisions by longitude and latitude. The system of division and subdivision which has been adopted has been developed with the idea of securing index maps of a scale suitable to record any desired data.

Following the division and subdivision of the Dominion into suitably sized areas, these areas were reproduced in a series of index maps suitable for the plotting of graphic records. Photographic reproductions, 12 inches by 9½ inches within the border, were prepared covering the entire series of subdivisions. These reproductions were made from the latest published federal and provincial maps. The principle adopted was to first photograph the complete watersheds of the major rivers and afterwards the index divisions, the latter to such a scale as to reproduce in readily readable form the information on the original map. These index maps have been printed on 11 inch and 14-inch sheets and bound in loose-leaf covers, the whole series forming a complete reproduction of the latest published maps of the Dominion.

The system of index maps is flexible and permits of any further degree of expansion which may be necessary. Any portion of any subdivision may, if desired, be enlarged to record graphically the details of any particular situation or project. The index maps at all times record the locations and index numbers of all the water resources items which can be graphically recorded.

Complementary to the graphical index, a system of cards and folders has been developed for the purpose of referencing the vast amount of data which is now available in published and in special reports, and in the form of records of all descriptions covering existing power plants, possible power sites, reservoirs, water supply, drainage and reclamation, etc., etc. The general principle adopted is to file under topic headings the data in each subdivision. Where the information to be filed is of a general character, it is also referenced under the larger divisions.

These cards are purely reference cards and each records for its particular division or subdivision, the references to the data which are available in that division and under that heading. The group of cards form an inventory of the entire pertinent data available in the division.

With each subdivision and its series of cards there is provided a folder similarly labelled for the filing of all loose computations, newspaper clippings, run-off measurements and other pertinent data. This folder may be subdivided with subfolders for the topic headings if desirable.

Some of the outstanding advantages of this filing system may be listed.—

1. The system is essentially simple in conception and in operation.

2. Once in operation with existing data filed, it is almost automatic in bringing required information to hand.

3. Any person interested in a particular district or river can secure for himself without trouble the information which is available.

4. It visualizes the water resources data on the index maps.

5. Being founded on drainage areas, it compiles the data in the form best adapted for the consideration of hydraulic problems.

6. When brought up to date it will render immediately available much pertinent data now buried in old files and office records.

7. It is flexible and capable of enlargement or contraction to the requirements of any organization using it.

8. It permits the continuous addition of new filing references.

9. When adopted by federal and provincial administrative or investigatory departments and by other organizations interested in the study of water resources, it will render the known pertinent data available for mutual interchange and convenient use.

10. Its adoption by federal and provincial organizations will result in uniformity in methods of filing, collating and analysing water resources data throughout the Dominion.

The more important Federal and Provincial Departments and organizations who have accepted the index inventory might be mentioned. The system is in practical application in all the field investigatory work of the Dominion Water Power Branch. Other branches of the Department accepting the system are the Reclamation Service and the Natural Resources Intelligence Branch.

Dominion organizations accepting the system include the Honourary Advisory Council for Scientific and Industrial Research and the Dominion Power Board, the latter of which has recommended it for publication and for adoption by all interested in administering or investigating water resources data.

Provincial organizations adopting the system include the Hydro-Electric Power Commission of Ontario, Quebec Streams Commission, New Brunswick Water Power Commission, Nova Scotia Water Power Commission and the British Columbia Water Rights Branch.

The Imperial Board of Trade has also recommended the adoption of the index inventory system in practically all its phases for use throughout the United Kingdom.

CENSUS OF CENTRAL ELECTRIC STATIONS.

During the year a census of the central electric power stations of Canada was carried to completion by the Dominion Water Power Branch in co-operation with the Dominion Bureau of Statistics working in co-operation with the Ontario Hydro-Electric Power Commission, the Quebec Streams Commission and the provincial departments concerned. The complete report is being published in two parts, Part I, comprising a complete census and statistical survey, with accompanying explanatory matter, whilst Part II forms a comprehensive directory of all commercial and publicly-owned central power stations in operation throughout Canada, showing the principal features of each, the locations where blocks of electrical energy are for sale, the prices at which power is obtainable, transportation facilities available in the vicinity, etc. The collection of the data was made by the Bureau of Statistics and the Provincial Departments and the analysis and preparation of the data by the Water Power Branch.

The statistics complete to January 1, 1918, include only central electrical stations, that is, stations developing electrical power for sale; all other electrical establishments such as electric railways, etc., are excluded. Outstanding features of the report are as follows.

The capital invested in central power stations totals $356,004,169. The total revenue received from the sale of electrical energy is $44,536,848. Of special interest is the actual cost of construction of hydro-electric power stations per installed horse power. Omitting all real estate, transmission and distribution equipment, seventy representative hydro-electric stations throughout the Dominion, with an aggregate turbine installation of 745,797 horse-power and a total construction cost of $50,740,458 show an average cost of $69.11 per installed turbine horse-power. The figure in brief represents the average capital cost of construction at the power site and is of considerable interest to engineers.

One of the most important facts disclosed as a result of the statistics is the outstanding positions which water-power takes in the central station field. Out of a total installed primary capacity of 1,844,571 horse-power, 1,652,661 or 89·6 per cent—practically 90 per cent—is derived from water. This figure is indicative of the extent and availability of the water-power resources of the Dominion and of the remarkable degree to which their adaptability for central electric station work has been appreciated in principle and realized in practice. The vast water-power resources of the Dominion, the ready adaptability of hydro-power to the production of electrical energy and the increasing extent and scope of economical electrical transmission form an industrial asset which probably more than any other will ensure a full measure of future prosperity.

Part II of the report, comprising a Directory of Central Electric Stations, is exhaustive and comprehensive in scope and will prove a valuable asset in the reconstruction period as it permits a bird's eye view of the present status of the industry in all parts of the Dominion and indicates the locations where expansion is readily feasible.

For Part I (statistical) application will be made to the Dominion Bureau of Statistics, while the Directory Part II will be distributed by the Dominion Water Power Branch as Water Resources Paper No. 27.

CENSUS OF DEVELOPED WATER POWER.

In conjunction with the census of central electric stations, a census of the developed water-power of the Dominion has just been completed by the Dominion Water Power Branch in co-operation with the Dominion Bureau of Statistics. The water-power resources of Canada, with their strategic locations adjacent to practically

every industrial centre, constitute one of our greatest assets, and it is satisfactory to note that the economic advantages accruing from utilization of these powers for industrial purposes is being fully realized in practice.

The returns (complete to January 1, 1919) indicate a total developed water-power capacity of 2,305,310 horse-power. This figure is several hundred thousand in excess of any estimate previously published and indicates that Canada's utilization of hydro power is even more marked than had been appreciated.

Of the total water-power developed 1,727,471 horse-power is installed in central electrical stations, that is to say, in stations developing electrical energy for distribution and sale; 352,214 horse-power is installed in plants owned and operated by pulp and paper companies, and 225,625 horse-power is installed in other miscellaneous manufacturing and general industrial establishments. The foregoing figure for pulp and paper companies does not, however, represent the total amount of water-power used in that industry: upwards of 100,000 hydro-electric horse-power in addition, is purchased by pulp and paper companies from central electrical stations making the total hydro power utilized in pulp and paper industry some 450,000 horse-power.

Returning to the central electrical station total of 1,727,471 horse-power, it is of interest to record that the central stations already constructed throughout the Dominion are designed for a machine installation of 530,000 horse-power in addition to the machinery now installed. Of this amount, the installation of some 270,000 horse-power is at the present time under contemplation in various parts of the Dominion. These figures do not include the 300,000 horse-power Queenstown Plant which the Hydro-Electric Power Commission of Ontario has under construction at Niagara.

In the Yukon the hydro power developed per thousand population totals 1,574 horse-power, in British Columbia 506 horse-power, in Quebec 376 horse-power, in Ontario 359 horse-power, and in Manitoba 153 horse-power. The other provinces average smaller figures. The ratio for the entire Dominion averages 276 horse-power developed per thousand population. The availability of hydro power, the distribution, density and occupation of the population have a very direct bearing upon the amount of power developed. The exceptionally high ratio in the Yukon is accounted for by extensive use of hydro power in the mining industry in conjunction with the comparatively small population.

The per capita figures of hydro power developed for the Dominion, when compared with similar figures for other countries, are indicative of the advanced position which this country takes both in the extent and in the utilization of its water-power resources. Norway and possibly Sweden are the only countries where the per capita utilization of water-power exceeds that of Canada. The most recent figures available for the United States would indicate a utilization of considerably less than 100 hydraulic horse-power per thousand population, as compared with 276 per thousand in Canada. The fundamental reason underlying the extensive use of water-power in Canada is the fact that practically every commercial centre from coast to coast, excepting only a few in the middle Prairie Provinces, has abundance of water-power available, not only for present needs but for all anticipated requirements.

CO-ORDINATION OF EMPIRE WATER RESOURCES.

Throughout the past season the department has taken advantage of the presence of Mr. H. E. M. Kensit, electro-mechanical engineer of the Dominion Water Power Branch, at present in London, to get in close touch with the activities of the Imperial Government in respect to the analysis of the water resources of the Empire with a view to co-ordinating investigatory work and adminstrative principles in so far as possible.

Throughout the year Mr. Kensit has been in close and continuous touch with the Conjoint Board of Scientific Societies formed in June, 1916, under the chairmanship of Sir Dugald Clerk, at the instance of the Council of the Royal Society after a conference with representatives of the leading societies of the United Kingdom, and now comprising a membership of fifty-four of such societies. The board was constituted for the furtherance of the following objects:—

> "Promoting the co-operation of those interested in pure or applied science; supplying a means by which the scientific opinion of the country may, on matters relating to science, industry and education, find effective expression; taking such action as may be necessary to promote the application of science to our industries and to the service of the nation; and discussing scientific questions in which international co-operation seems advisable."

The board appointed ten sub-committees to deal with various scientific and industrial investigations, one of these being a "Sub-committee on the Water-power of the British Empire," with instructions to "report what is at present being done to ascertain the amount and distribution of water-power in the British Empire."

In March, 1918, Mr. Kensit was co-opted as a member of this water-power committee in all its work and has advised the committee fully as to water-power matters throughout the Dominion both in respect to power available and developed and as to the administrative policies and investigatory procedures of the Dominion and provincial departments or commissions interested in water resources matters. The committee published a preliminary report in July, 1918, and a second in March, 1919, analysing the water-power resources of, and referring to the administrative and investigatory policies throughout the Empire. In these reports the status of water-power development in Canada compared with the rest of the Empire is the subject of many laudatory comments.

Mr. Kensit has regularly attended the hearings of the Water Power Resources Committee formed in June, 1918, by the Imperial Board of Trade, with instructions to "examine and report on the water-power resources of the United Kingdom and the extent to which they can be made available for industrial purposes." Mr. Kensit supplied this committee with full information as to the investigatory methods adopted in Canada and supplied a complete set of the publications of the Dominion Water Power Branch, with full particulars as to the water resources index inventory system, the Dominion Power Board, etc. Mr. Kensit, by request, became a member of the "Data Sub-Committee" of the foregoing committee. After a thorough examination of the water resources index inventory system developed by this branch, the Water Power Resources Committee of the Board of Trade has practically adopted the system along with the other methods of the Dominion Water Power Branch for use throughout the United Kingdom.

Mr. Kensit's work in London has brought the water-power resources of Canada to the attention of the Imperial authorities in a manner which would not have been otherwise possible. The direct connection which has been established for the various Dominion and provincial water-power organizations will undoubtedly prove of outstanding value to the Dominion in the future development of our water resources.

DEPARTMENT OF THE INTERIOR

ANNUAL REPORT

OF THE

TOPOGRAPHICAL SURVEYS BRANCH

1918-19

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

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REPORT

OF THE

TOPOGRAPHICAL SURVEYS BRANCH

PART I—FIELD WORK.

Although the surveys appropriation for 1917-18 had been reduced by $200,000 from that of the previous year, a further reduction of $280,000 was made in 1918-19, the total amount of the appropriation being only $496,300.

Only thirty-six parties were employed whereas the numbers for the three previous years were forty-one, fifty, and sixty-five, respectively. Ten of the thirty-six parties were employed partly in one province and partly in another, five were employed exclusively in Manitoba, eight in Saskatchewan, ten in Alberta, and three in the railway belt of British Columbia. No men were engaged for work on survey parties who were eligible for military service, or who were suited for agricultural work or for other pressing national service, and the number for each party was reduced to the lowest possible number consistent with reasonable efficiency.

To assist in placing returned men on the land two parties were sent to the Peace River district to classify the lands in that vicinity that had been reserved for soldier settlement.

A most desirable tract of prairie land along Keg river in the Peace River district was as yet unsurveyed. Although this land was somewhat difficult of access, it was considered advisable to have it subdivided immediately so that there might be no hindrance to settlement when the district opens up. At the time of survey there were already several squatters on the land.

Six parties were employed in retracing the boundaries of school lands. The object of these retracement surveys was to permanently mark the corners and to accurately determine the areas in these townships of all quarter-sections of school lands which had not yet been patented.

RETRACEMENT OF BASE LINES.

The survey of base lines had been advanced so well in recent years that it was possible to suspend temporarily the survey of additional lines. Two parties were detailed to retrace block outlines run a number of years ago. One party worked in northern Saskatchewan, and the other in southern Manitoba, Saskatchewan, and Alberta.

Party No. 1.—Retracement of block outlines in southern Manitoba, Saskatchewan, and Alberta.

PERSONNEL:

J. R. Akins, D.L.S., in charge.

Assistant—
G. H. Herriot, D.L.S.

Levellers—
G. W. Bannister,
E. L. Ashwell.

Party—
7 employees.

The purpose of these retracements was to ascertain the correct bearings and chainages of the lines joining the monuments, as they are on the ground, the direction of the lines being determined by frequent and accurate observations for azimuth. These lines were originally run many years ago when the accuracy required was below that demanded for the control of the present surveys.

Horses for transport were purchased in southern Alberta as near the commencement of the work as possible in order to save the cost of transportation, and also because the prices asked were not so high as in northern Alberta.

The first work was the retracement of the 2nd base line from range 15 west of the Fourth meridian to the Fifth meridian. During this survey the wind was so high as to interfere with chaining and instrument work, at which times work had to be suspended until the wind fell.

St. Mary's river, reached on June 27, was too deep to ford and the nearest bridge was twelve miles away. No boats were available so one had to be made. A bridge over Belly river, however, reached on July 3, made crossing easy.

The 2nd base line was tied to the international boundary by a line surveyed south between ranges 27 and 28. This line was wooded and very rough giving the levellers much trouble.

From the 2nd base line the Fifth meridian was retraced north to the 3rd base, but as the meridian north of this point crosses the Porcupine hills which are heavily wooded, and there was only one axeman on the party, an offset was made along the 3rd base around the hills and back to the meridian on the 4th base. The survey of the meridian was stopped at the 4th correction line.

The surface along the meridian is very rough and although there were two levellers they found it difficult to keep up with the remainder of the party.

The next work was retracing the 4th base easterly from the Principal meridian through seven ranges. Although this district is fairly well settled considerable cutting was necessary on the line where bush was encountered. The retracement of the 2nd base line was then made easterly from the Principal meridian through nine ranges and the survey of the east boundary of range 7 was made northerly from the 2nd base to the correction line. Here the cutting was so heavy it was decided to follow along the railway across range 7 in a northwesterly direction and then along the east boundary of range 6 to the 3rd base line.

The last work done by this party was the retracement of the Second meridian from the north boundary of township 24 to the north boundary of township 32. This work was begun at the northern end and continued southward, as the facilities for wintering horses were better at the southern end than in the north part. Good progress was made along this line as the bush was light.

Both main levels and check levels were taken. Two levellers were employed in Alberta as the ground was rough, but one leveller did the work in Manitoba and Saskatchewan. Permanent bench-marks made of iron pipe five feet long, about three inches in diameter, filled with concrete and having a flange on the bottom and a brass cap on the top on which is cut the number of the bench-mark were placed at the beginning, centre, and end of each township boundary retraced.

Party No. 2.—Retracement of block outlines in northern Alberta.

This party was engaged during the early part of the season in retracing the Fourth meridian from township 88 to township 104; the rest of the season was utilized in making stadia traverses of water areas and their connections between the headwaters of Churchill and Clearwater rivers.

PERSONNEL:

G. H. Blanchet, D.L.S., in charge.

Assistants—
J. E. Fredette, D.L.S.
D. E. Chartrand, D.L.S.

Leveller—
W. H. Dowling.

Party—
11 employees.

The purpose of the retracement surveys was to locate errors known to exist either on this meridian or on the base lines between the Fourth and Fifth meridians.

The base line closings between the Fourth and Fifth meridians are fairly regular until the 26th base line is reached. This line and the two immediately north of it show a shortage of about four chains. The position of the Fifth meridian was checked by block outlines to the west of it and its alignment found to be approximately correct. As no base lines had been run east of the Fourth meridian, it was concluded that either the

Fourth meridian deflected to the west north of the 25th base or that the 26th, 27th, and 28th base lines were chained too long. The uncertainty in the case of such an important line as the Fourth meridian which forms the boundary between Alberta and Saskatchewan made investigation necessary.

The party reached Methy lake in tp. 87-24-3 on April 28, the spring floods causing some delay. Bridges on several streams had to be repaired and a raft made to cross Christina river.

The Fourth meridian was retraced from township 88 to township 104, as much as nine miles being retraced in a day. Horse feed was scarce and speed was necessary. On the return journey the horses had to be fed the surplus supplies, but two of them died. On the completion of the retracement they were sent out to McMurray.

In addition to the azimuth the line was chained in patches only, on account of the speed with which the line was gone over, but on the return trip all the gaps were completed. The chainage was uniformly long thus confirming the results of the latitude observations at the Clearwater and lake Athabaska. Portions of the 24th to 28th base lines were retraced and in every case the chainage was long, thus accounting for the shortage of the base line. An error of over half a chain was found on the 28th base line where it crosses one of the back-waters of Athabaska river. In the original survey this distance was secured by triangulation but on the retracement it was chained and carefully checked.

Levels were run along the meridian and base lines, the greatest error found being twelve feet on the 25th base line east of the Athabaska.

The retracement work was completed on June 7, and the stadia traverse of the chain of lakes commencing at Methy lake through Methy river, Peter Pond lake, Churchill lake, McBeth channel, Ile-à-la-Crosse lake, Frobisher lake, Turner lake, and Wasekamio lake, was made for the purpose of obtaining an accurate map of these waters and of the islands in them.

The stadia survey of these lakes is entirely different from similar work in surveyed territory. In the latter case ties to existing monuments can be made at least within two or three miles, thus affording a check on the work, but the only lines run in northern Alberta and Saskatchewan are base lines twenty-four miles apart and the large lakes traversed here with their deep bays and numerous islands occupied on one occasion a month to get from one base to another.

Three months were spent on stadia surveys in this locality, during which time 1,400 miles of shore line were defined.

The traverse of Turnor lake presented the greatest difficulty as there is practically no beach, and the shore is thickly timbered with heavy brush fringe. The lake margin is either granite outcrops or large boulders with deep water close to shore. It was often necessary to set the traverse stations in two or three feet of water, and the slippery rock and unusually rough water made work difficult.

Some of the shore lines had a wide border of floating bog on which hubs had to be used for the transit and it was necessary for two men to work together at the transit as walking around it on the soft bog would displace it.

SUBDIVISION SURVEYS.

The number of parties employed on subdivision surveys was reduced from ten last year to one this year. This was done for the purpose of releasing as many labourers as possible for agricultural and munitions work, the normal number of labourers on a regular subdivision party being about twenty.

Surveys in Peace River Valley.

PERSONNEL:

J. A. Buchanan, D.L.S., in charge.

The subdivision made by this party lies in Keg River prairie in the lower Peace River valley. Instead of building a scow at Peace River and floating down to the location of the work, transportation was secured on a river

Assistants—
T. H. Bartley, D.L.S.
G. S. Bayly.

Leveller—
H. G. C. Becks.

Party—
9 employees.

steamer for what building a scow would cost, thus saving the time of construction. Also four or five days would be taken in going by scow, while the trip by steamer was made in one day.

Survey operations were begun on May 22 in tp. 101-22-5 and continued through seven more townships, the land suitable for settlement in every township being subdivided. Much difficulty was experienced in sinking the survey posts as large boulders and gravel were encountered in seventy-five per cent of the holes and on one occasion a full half day was spent in sinking two posts.

Regular survey work was stopped on October 19, but a small amount of traverse and check levels kept the party busy till October 25.

MISCELLANEOUS RESURVEYS.

As in former years there were many requests from settlers to resurvey lines defining their boundaries, to establish section and quarter-section corners which were lost and to correct lines which were said to be in error. These requests are confined mainly to the land surveyed many years ago.

Party No. 1.—Resurveys in Southern Manitoba.

This party was employed in making resurveys and retracement surveys in southern Manitoba, and miscellaneous surveys in the vicinity of lake Winnipeg and lake Winnipegosis.

PERSONNEL:

J. E. Jackson, D.L.S., in charge.

Assistant—
J. E. Morrier, D.L.S.

Party—
7 employees.

Work was commenced on June 6 with the resurvey of tp. 1-13-E. In this township wooden posts were used extensively to mark the corners in the original survey and many of these posts had entirely disappeared. Standard iron posts were substituted. Owing to the shortage of labour complete monuments were not erected.

The next work undertaken was the resurvey of tp. 21-2-E., situated close to Chatfield on the Canadian Northern railway, Fisher River branch. Posts without monuments were planted at all corners as in the previous township.

Upon the completion of this work the transport equipment consisting of wagons and horses was discarded and the party taken to Matheson island on lake Winnipeg by steamer. This island was subdivided into lots for the use of the settlers. Work in the vicinity of this lake was completed with the retracement of the boundaries of the Indian reserve at Berens river and the subdivision of the old Bloodvein Indian reserve which was replaced by a new reserve nearer to the mouth of Bloodvein river.

The party returned to Winnipeg and proceeded to Winnipegosis to undertake surveys along lake Winnipegosis. Work was just commenced but had to be abandoned because members of the party were laid up with influenza. Survey operations were closed on November 19, one member having died from this sickness.

Party No. 2—Resurveys in Southwestern Saskatchewan.

Most of the work of this party consisted of the resurvey of isolated townships in the southwesterly part of Saskatchewan. Operations were begun in tps. 20 and 21-29-3 on May 17, and ended on December 3.

PERSONNEL:

R. H. Knight, D.L.S., in charge.

Assistant—
D. O. Wing, D.L.S.

Party—
7 employees.

The transport consisted of four horses, a wagon, a democrat, and an automobile.

Some of the islands in Saskatchewan river were not subdivided at the time of the original

survey. Section lines were run across these, and the heavy bush made progress slow. This was added to by the impossibility of securing help.

Parties Nos. 3 to 6—Travelling Parties.

The miscellaneous surveys required were small, numerous, and scattered. Where only a small survey was needed, the surveyor was accompanied by a single labourer. For scattered work travel was by railway. Where a number of small jobs were close together the surveyor was furnished with an automobile. The roads throughout the western provinces were ideal for travel on account of the small amount of rainfall, but this proved detrimental to the crops. The work of the travelling parties consisted of resurveys, retracements, corrections, surveying townsites, retracing group lots, connecting Dominion land surveys to Alberta and British Columbia boundary survey, taking magnetic observations, etc. Some of the magnetic repeat stations occupied were of long standing, one at Fort Alexander being occupied by Sir John Franklin in 1825, and others of more recent date occupied by members of the Carnegie Institution, the Dominion Meteorological Service, and the Dominion Observatory.

PERSONNEL:
A. E. Glover, D.L.S.
E. S. Martindale, D.L.S.
R. B. McKay, D.L.S.
R. C. Purser, D.L.S.

Assistants—
Chas. Harvey, D.L.S.
G. P. Pearson.

Parties—
One assistant, or one labourer to each party.

RAILWAY BELT SURVEYS.

The land in the railway belt suitable for settlement lies mostly on flats or benches along rivers, and being composed of alluvial soil is very productive. As settlement progresses benches higher up have to be surveyed and every year less good or medium land is available for settlement. In districts where the danger from summer frosts is not too great some high benches are settled on if they can be irrigated.

The number of survey parties in the railway belt was reduced to three, as compared with four the previous year.

Party No. 1—Surveys near Revelstoke, B.C.

The first surveys made by this party were in the valley of Cranberry creek in tps. 20 and 21-1-6 where survey operations were begun on May 24. The rough and varied character of the ground where surveys were carried on made a single mode of transportation impossible.

The surveyor therefore hired locally any necessary transport which was sometimes by wagon, by pack train, or by man packing. A boat and canoe were also taken along for crossing rivers and lakes encountered as it is almost impossible to ford the swift running mountain streams.

On the survey of the belt limit in tp. 28-1-6 a climb of 3,500 feet was made in a mile and a half and it required eight hours owing to the dense underbrush. No place could be found for a camp at the starting point of the survey and there was no water. Accordingly the party had to move higher up to a snow bank where melted snow furnished water. A three days' rain then set in and four days were required to run half a mile, as many inaccessible cliffs were encountered and an offset had to be run to the valley below. Large trees were encountered six feet in diameter, to fell which seven-foot saws were necessary. Carrying these saws up a thirty-degree slope covered with alder and devil-club is tantalizing work, and felling large trees on the steep mountain sides is very dangerous especially to those working below. In such cases all must

PERSONNEL:
N. C. Stewart, D.L.S., in charge.

Assistants—
P. J. Moran, D.L.S., (part time).
R. F. Dynes, D.L.S., (part time).

Party—
7 employees.

scramble out of the way and much valuable time is lost. Some narrow escapes were also experienced from rocks which were dislodged higher up the mountain.

During the latter part of the season some bench lands were surveyed in the valley of Eagle river, where the difficulties were small compared with those on the belt limit in tp. 28-1-6.

The final work consisted of a retracement of mineral claims in tp. 23-18-5, which was completed on October 15.

Party No. 2—Surveys near Ashcroft.

Before commencing the regular season's work near Ashcroft this party made some small surveys near Agassiz in tps. 3 and 4-29-6 and in tp. 11-26-6. This work was begun on May 21 and completed on June 8.

PERSONNEL:

W. J. Johnston, D.L.S., in charge.

Assistant—
C. T. Hamilton, D.L.S.

Party—
6 employees.

The district around Ashcroft is of a rough mountainous character, although there are some level benches along the streams. Transportation was rather difficult owing to the rough surface, man-packing being adopted where pack trains or wagons could not be used.

Survey operations were closed on October 12.

Party No. 3—Surveys around Kamloops, B.C.

Work was begun by this party in tp. 20-19-6 early in June, on the north shore of Kamloops lake. Some of the lines had become obliterated and had to be retraced and a small portion of the shore of the lake traversed. As this work could not be finished on account of the high water in the lake it was left until the last of the season. Much of the land surveyed lies at a high elevation and the surface is rolling mountain plateau most of which has been overrun by fire.

PERSONNEL:

John Vicars, D.L.S., in charge.

Assistant—
James Gibbon, D.L.S.

Party—
7 employees.

Surveys were made in a number of townships and many small lakes were traversed.

Operations were closed on December 8 after completing the retracement of an Indian reserve boundary.

STADIA SURVEYS.

The investigation of water areas in surveyed townships was continued under the same conditions as last year, eleven surveyors being employed. In addition to the examination of water areas the condition of the monuments was noted and where the survey work to be done in any place was small it was completed by the stadia party, thus saving the expense of another party.

Most of the area where these surveys were carried on was subdivided thirty or forty years ago and the plans compiled from these surveys do not now represent actual conditions on the ground as many lakes have partly or fully dried up and others have increased in size. The dried-up beds of the lakes have generally changed to hay meadows and the owners of the adjoining lands wish to acquire title to the dried-up tracts.

Party No. 1—Surveys in Manitoba.

The area covered by this party lies between lakes Winnipeg and Manitoba around Shoal lake.

PERSONNEL:

J. W. Pierce, D.L.S., in charge.

The area of most importance examined was the bed of Shoal lake. This lake was originally twenty

Assistants—
J. K. Benner, D.L.S., (part time).
J. H. Smith, D.L.S., (part time).
Party—
3 employees.

miles in length and from two to five miles wide, but at present about two-thirds of the original area is dry, much of it producing hay and some cultivated. In many places roads are constructed across the dry bed. In addition to traversing the present lake it was necessary to run about seventy miles of section line and to erect the same number of monuments in order to extend the subdivision to the water's edge.

In this locality 186 water areas were examined involving the running of 328 miles of traverse. About 90 miles of section lines were run and marked by 95 new section and quarter-section monuments.

Work was begun on May 28 and on October 30 survey of water areas ceased, the party being employed for the remainder of the season on the investigation of lands in the Riding Mountain forest reserve for soldier settlement purposes.

Party No. 2—Surveys South from Regina.

PERSONNEL:
C. Rinfret, D.L.S., in charge.
Assistant—
A. H. King, D.L.S.
Party—
3 employess.

The area examined by this party consists of ninety-three townships lying about forty miles south of Regina and Moose Jaw. Work was begun in tp. 6-3-2 on May 17, and survey operations were closed on November 18.

In all 716 miles of traverse were run and seventy-one monuments were built at corners where sloughs and lakes of the former survey had dried up. The erection of these monuments necessitated the running of ninety-six miles of section lines.

During the first part of the season the weather was dry and many dried-up lakes were found but later in the season more rain fell and lakes were numerous. In townships 14, ranges 28 and 29 west of the Second meridian eighty-two lakes were found, and in the adjoining townships lakes were numerous.

Party No. 3—Surveys Northeast of Regina.

PERSONNEL:
P. M. H. LeBlanc, D.L.S., in charge.
Assistant—
R. Bruynseraede, D.L.S.
Party—
3 employees.

About fifty-eight townships north and northeast of Regina constituted the area examined by this party. The Fishing lakes lie in the centre of this area at the foot of a valley 250 to 300 feet deep. The depth of the water in the lakes is reported to be in places one hundred feet but the greatest depth found by sounding was thirty-eight feet.

A Dominion fish hatchery is located on one of the central lakes.

Work was begun in the Fishing Lakes district on May 15 and finished on August 29 when the survey of Quill lakes was begun. These lakes are the largest bodies of alkaline water in the western provinces, but artesian wells are found at very short distances from the lakes from which pure cold water flows.

Survey operations were closed early in October, 700 miles of stadia traverse being run.

Party No. 4—Surveys near Prince Albert.

PERSONNEL:
W. Christie, D.L.S., in charge.

The whole area covered by this survey lies south of North Saskatchewan river. The survey of this district was made many years ago and no accurate record was made of the water areas, for quarter-sections shown on

Assistant—
J. H. Patterson, D.L.S.

Party—
3 employees.

the plan as containing 160 acres of land had a large portion covered by water.

Survey operations were begun on May 28 and continued until October 19, when stadia work was stopped and the party employed on soldier settlement work for the remainder of the season. The transport consisted of two teams of horses, a wagon, a democrat, and a saddle horse.

During the season 481 miles of traverse were run, and many small ponds which were not large enough to survey were investigated. A number of magnetic observations were taken.

Party No. 5—Surveys Northwest of Saskatoon.

The district in which this party worked consisted of a block of forty-three townships lying immediately northwest of Saskatoon. Most of the area is open prairie but towards the north in the vicinity of tp. 45-8-3 the country gradually becomes covered with bush.

PERSONNEL.

P. J. McGarry, D.L.S., in charge.

Assistant—
A. Fawcett, D.L.S.

Party—
3 employees.

This party organized at Prince Albert and commenced survey operations on May 27. Work was continued throughout the season and on October 14 the party disbanded. During this period some 580 miles of traverse were run. A portion of Saskatchewan river was traversed. In one township alone, tp. 45-8-3, sixty-five lakes were traversed requiring three weeks of the party's time. The usual methods of survey were followed, and the usual transport equipment of four horses, a wagon, democrat, and car were used.

Party No. 6—Surveys North and Southwest of Medicine Hat.

The central part of the area to the southwest lies in Cypress hills. The highest parts of these hills are 4,200 feet above sea-level.

PERSONNEL:

G. C. Cowper, D.L.S., in charge.

Assistant—
C. H. Snell, D.L.S.

Party—
3 employees.

The townships surrounding these hills were surveyed many years ago but no bodies of water were shown on the plans if the area was less than twenty acres. The present surveys include water areas over five acres in area and consequently as small lakes were numerous each township furnished a great deal of traverse work. The largest of these lakes has an area of about 300 acres and they all appear to be fed by springs.

Work was begun on May 22 and field operations were closed on October 21. No time, practically, was lost on account of bad weather, the season being favourable for surveying. One hundred and fifty-six townships were investigated involving the running of 573 miles of traverse and twenty miles of resurvey.

Party No. 7—Surveys North and Northwest of Battleford.

Part of the work assigned to this party consisted of the traverse of part of North Saskatchewan river near Lloydminster, and this work was begun on June 3 so that the traverse could be completed before the flood season. The floods came however on June 13 rendering further work impossible. The remain-

PERSONNEL:

T. A. Davies, D.L.S., in charge.

Assistant—
W. P. Daly, D.L.S.

Party—
3 employees.

der of the season was employed on investigation of water areas in about sixty townships lying north and northwest of Battleford. Over 625 miles of traverse were run before operations were closed on October 10.

The transport consisted of a team and wagon, and an automobile.

In the valley of Battle river many section and quarter-section monuments were missing, and also the course of the river was materially changed through erosion of the banks. The absence of the monuments was due to the presence of lakes and sloughs at the time of the original survey nearly all of which are now dried up. The results of the investigation show that it was urgently needed as well as the retraverse of the changed courses of the river.

Party No. 8—Surveys Southwest of Stettler.

The district covered by this party lies in eastern Alberta extending from the boundary between Alberta and Saskatchewan westerly to range 18. Some townships east of the boundary in Saskatchewan were also investigated.

PERSONNEL:

G. A. Bennett, D.L.S., in charge.

Assistant—
J. E. Gray, D.L.S.

Party—
3 employees.

Survey work was begun on May 23 in tp. 26-27-3. During the season sixty-five dry lake beds were found which produced hay or were partly cultivated, in eighty-nine others the areas had changed considerably since the original survey, and two hundred and sixty-five lakes were located which were not shown on previous surveys.

Forty-eight observations for magnetic declination were taken, including five repeat stations which had been occupied in previous seasons. On account of cold and stormy weather operations were closed on November 25.

Party No. 9—Surveys Northeast of Calgary.

The investigation of water areas in townships 19 to 32 from range 21 west of the Fourth meridian to range 2 west of the Fifth meridian, and some adjoining townships was made by this party. Many water areas were found not shown on the original plan, but most of them were under twenty acres in area.

PERSONNEL:

W. J. Boulton, D.L.S., in charge.

Assistant—
K. F. McCusker, D.L.S.

Party—
3 employees.

Many of the larger lakes in this area are partially dry and others wholly dry. This is partly due to settlement as cultivation prevents run off, the water being absorbed much more quickly on cultivated land and less water flowing to the old lake beds. The courses of some of the rivers have changed in places as much as half a mile. This is characteristic of rapid mountain streams where erosion of banks is always going on. Frequent traverses of such streams are necessary to keep the township plans up-to-date.

The transport outfit consisted of an automobile, a wagon, a democrat, and four horses.

Survey operations were begun on May 30 and closed on October 22, during which time 1,100 miles of stadia traverse were run.

Party No. 10—Surveys east of Red Deer.

The area in which this party carried on stadia surveys lay east of the city of Red Deer and west of Stettler.

PERSONNEL:

W. H. Norrish, D.L.S., in charge.

Operations were begun on May 25 and continued until August 8, when the party was em-

Assistant—
E. Lamert.

Party—
3 employees.

ployed on the resurvey of school lands. This resurvey was completed on December 13 and the traverse of Red Reed river was begun, completing it on January 14. This traverse was left over from the early summer as it could be done much more economically on the ice on account of the brushy character of the shore line.

During the time employed on stadia work over 670 miles of traverse were run including about 100 miles on Red Deer river. Various types of country were encountered ranging from prairie to fairly heavily timbered land, and the methods of survey had to be adjusted to suit the district. The transport during the summer consisted of four horses, a wagon, a democrat, and an automobile, but during the traverse of Red Deer the only transport used was a team and an old caboose.

Party No. 11—Surveys south of Edmonton.

The area investigated by this party consisted of ranges 24 and 25 from township 53 south to township 46. Work was commenced on May 30 and continued throughout the season until December 13 when the party was disbanded. During this period stadia traverse was made of approximately 340 miles and 120 miles of section lines surveyed. Seventy-five magnetic observations were taken and an attempt was made to obtain reliable magnetic observations at the repeat stations in Edmonton. This was abandoned however as the local attraction was too great. In addition to the regular stadia work during the latter part of the season school land surveys were made which accounts for the large number of section lines surveyed by this party.

PERSONNEL:

H. M. R. Soars, D.L.S., in charge.
Assistant—
E. Nelson.
Party—
3 employees.

Considerable bush lands exist in the townships in which this party worked and this had the effect of slowing down the work somewhat. The methods of survey adopted were similar to those of other stadia parties working in a bush district. The transport equipment consisted of four horses, a wagon, and a democrat.

RETRACEMENT OF SCHOOL LANDS.

Sections 11 and 29 of every surveyed township in Manitoba, Saskatchewan, and Alberta are set aside as an endowment for purposes of education. When the surrounding sections are settled on and improved the school lands are sold by auction and as they have become very valuable, it is important to have the boundaries well marked and the contents accurately measured.

Six parties were therefore employed for the whole season on this work and two other parties for part of the season.

Party No. 1—Surveys east and south of Winnipeg.

This party was engaged in investigating and retracing school lands lying close to the city of Winnipeg. During this period some 151 miles of section lines were retraced.

PERSONNEL:

C. H. Taggart, D.L.S., in charge.
Party—
1 employee.

The original surveys in this district were made many years ago; in fact they were among the earliest surveys conducted in the western country. Many of the monuments are obliterated or lost. The lands being situated so close to a large city such as Winnipeg are of great value.

The surveys conducted by this party were therefore of the greatest importance, and entailed a large amount of retracement of lines to monuments still existing, as well as the erection of many new monuments.

While carrying on these surveys the surveyor was instructed to estimate the value of the school lands affected by the surveys. The estimate was based upon the value of the surrounding lands, due note being made of all sales within the previous few years.

The survey work was actually commenced on June 15, although a number of magnetic observations were previously made at a repeat station in River Park. The transportation equipment used was a team of horses, and a democrat, which was suitable for the work to be done. Work was continued throughout the season until November 11, when both the chief and his helper were stricken with a severe attack of influenza. Very little time was lost due to inclement weather and the fall of the year was almost ideal for survey work.

Party No. 2—Surveys west of Brandon.

PERSONNEL:

J. A. S. King, D.L.S., in charge.

Party—
1 employee.

The retracement of school lands in a block of twenty-seven townships about twenty miles west of Brandon constituted the work of this party.

Most of the work was in open prairie but a good deal of cutting was necessary which made progress slow with but two men on the party.

Very few of the original monuments were found, and as many of the original settlers have left the place a great deal of time had to be spent collecting evidence of the original surveys. In fact as much time was spent in this way as in actual survey work. A great many monuments were lost and many miles of retracement had to be made to re-establish these corners.

Party No. 3—Surveys east of Regina.

PERSONNEL:

L. E. Fontaine, D.L.S., in charge.

Party—
1 employee.

The ten townships in which retracement of school lands was carried on lie within thirty miles of the city of Regina.

The season's work which consisted mainly of investigation, retracement, re-establishment of lost corners and correction of monuments was begun on June 7 and ended on December 13. The last two weeks of this period were employed in taking magnetic observations at repeat stations as the deep frost in the ground at the end of November made mounding on retracement work difficult.

During June and the first part of July the unusually high winds proved a hindrance to the work and the difficulty of securing help was also a serious drawback as with only one man on the party every retraced section had to be travelled three times, transitting, chaining, and then posting and mounding.

As the original surveys were made many years ago many of the monuments have disappeared and the school land section lines had to be followed till a monument on the produced line was found. Also many of the adjoining lands were patented and the owners had to be consulted. This took much time, as often the owners were hard to locate.

Party No. 4—Surveys around Saskatoon.

PERSONNEL:

J. M. Cote, D.L.S., in charge.

Of the sixteen townships in which school lands' investigation was carried on all were within thirty miles of Saskatoon. On account of the shortage of labour, only one

Party—
1 employee.

labourer was allotted to this party, transportation being by means of an automobile.

Work was begun on May 21 and finished on October 30, retracement being made in townships 35 to 38 in ranges 4 to 6 west of the Third meridian, and also in tp. 35-3-3 and tps. 36 to 38-7-3. Duplicate monuments were found on some of the lines and settlers' fences were found along the erroneous monuments.

Numerous bluffs were encountered during the survey which rendered progress slow and additional lines had to be retraced owing to lost monuments. In all 136 miles of section were retraced.

Party No. 5—Surveys near Vegreville, Alberta.

During the first part of the season the members of this party were engaged on stadia surveys of lakes between Vegreville and Edmonton, but from August 1 they were employed on the examination of school lands in the same area.

PERSONNEL:

H. M. R. Soars, D.L.S., in charge.

Assistant—
E. Nelson.

Party—
3 employees.

The same transport of four horses, a wagon, and a democrat was used and no difficulties were experienced in transportation as the whole area has a fairly uniform surface. Digging holes for the new standard survey posts, however, took much time as the subsoil was so hard it had to be chipped with a bar, and the party being small progress was slow.

Over 100 miles of line were retraced before the close of operations. Observations for magnetic declination were taken whenever possible both on the stadia work and resurvey.

Party No. 6—Surveys east of Edmonton.

The area examined by this party consisted of the school land sections in townships 53 to 56, ranges 15 to 18 west of the Fourth meridian and lies almost due east of the city of Edmonton.

PERSONNEL:

D. F. McEwen, D.L.S., in charge.

Party—
1 employee.

Operations were begun on May 20 and closed on November 18, 143 miles of section lines being retraced. During the first part of the season operations were hindered by wet weather. Owing to scarcity of labour only standard posts were placed to mark corners, but after August 15 an extra man was hired and complete monuments were made.

Almost all the old iron posts of the original survey were removed by settlers who seem to have a mania for doing so, and attempts were made to remove even the new style of post, but without success, as the new post when properly placed is hard to remove. In some cases settlers have taken witness posts as the true corners and built their fences accordingly.

On October 23 the assistant was taken ill and until the end of the season local help had to be relied on.

Party No. 7—Surveys east of Red Deer.

During the first half of the season this party was employed on stadia surveys, the retracement of school lands being begun on August 8. The only stadia traversing done subsequent to this date was on bodies of water encroaching on the school lands.

PERSONNEL:

W. H. Norrish, D.L.S., in charge.

Assistant—
E. Lamert.

Party—
3 employees.

In the valley of Red Deer river progress was slow as the surface is rough. Back from the river valley the land is so rough that it is fit only

for grazing. Travel was difficult and the banks of the valley are so steep that it was almost impossible to get horses or automobiles up or down.

The transport consisted of four horses, a wagon, democrat, and an automobile, and the varied character of the area covered made transportation difficult as the transport had to be adapted to suit the country.

Party No. 8—Surveys northeast and southwest of Calgary.

Before commencing the regular season's work of retracing school lands this party was employed until May 16 reposting the lots in Banff cemetery, as when the cemetery was resurveyed in 1913 the lot corners were marked by wooden posts, many of which were lost or the markings had disappeared.

PERSONNEL:

C. M. Walker, D.L.S., in charge.

Party—
1 employee.

The first area in which school lands were investigated consisted of townships 24 to 29, ranges 1 to 3 west of the Fifth meridian. Standard posts were placed at all corners, but on account of the great scarcity of labour it was impracticable to have pits dug. Little time was lost on account of bad weather but several times the wind and dust made progress impossible, the dust being so thick that objects fifty feet away could not be seen.

During the season 315 miles of line were run and 605 posts placed.

SOLDIER SETTLEMENT SURVEYS.

With a view to securing land for returned soldiers, all vacant lands in northern Alberta within fifteen miles of railway lines have been reserved.

At the request of the Soldier Settlement Board two surveyors were detailed to inspect the lands so reserved in the Peace River and Grande Prairie districts and to ascertain the location of those suitable for settlement. The surveyors were furnished with all available information from reports and maps of previous surveys in that locality so that no time was spent investigating worthless land.

The total number of quarter-sections investigated by these two parties was 17,100: this is equal to an area of 142 miles long by 30 miles wide.

The object aimed at in the examination was to ascertain what amount of land in each quarter-section was suitable for agricultural purposes and what kind of soil it contained. Quarter-sections containing less than thirty acres of open land were not considered as suitable for immediate settlement.

From the information furnished by these surveys a map of the district has been compiled showing in colours the different classes of land. Already over eight hundred of these homesteads have been taken up and indications point to many more being taken in the near future.

Land classified as suitable for immediate settlement had to be fairly level, the soil of first-class quality and the quarter-section had to contain a sufficient amount of prairie land to enable the settler to make a fair start the first year.

Lands considered as fair for settlement included quarter-sections with considerable open prairie but with the top soil partially burnt off, or a part of the area too rough for ploughing.

Lands which could be economically improved comprised the next class. The soil had to be of first quality and the clearing of a large portion fairly easy. Settlers have, in the past, homesteaded such lands with excellent success throughout the western country being satisfied to do a certain amount of clearing before cropping the lands.

Areas classed as hay meadows had to contain at least twenty-five per cent of meadow land producing abundant crops of hay which can be harvested in an average season.

Areas containing first-class soil but covered with a growth of trees and consequently offering little inducement to settlers were classed as lands requiring extensive improvements.

Grazing lands were also recorded. These lands usually were those too rough for cultivation but which nevertheless were suitable for grazing.

The last class consisted of worthless land and comprised steep rugged hillsides too rough for cultivation or grazing, gravelly or barren sandy land, stony land, extensive bogs, or peaty swamps. These latter may be reclaimed by drainage but under present conditions were classed as worthless land.

The map prepared shows at a glance where these different classes of land are located and as the scale is large it should prove useful to prospective settlers.

In addition to the work done in northern Alberta two surveyors were employed for a short time: W. Christie, D.L.S., for two months investigating townships in the Porcupine forest reserve and J. W. Pierce, D.L.S., investigating townships in the Riding Mountain forest reserve.

Party No. 1—Examination of lands between Smoky River and Lesser Slave lake.

PERSONNEL:

L. Brenot, D.L.S., in charge.

Assistants—
E. F. Gorman, D.L.S.
P. A. Shaver, D.L.S.
J. P. Howe, D.L.S.

Party—
3 employees.

The lands examined by this party lie generally within fifteen miles on either side of the Edmonton Dunvegan and British Columbia railway between Lesser Slave lake and Smoky river, and between McLennan and the town of Peace River.

Work was commenced on June 6 and finished on November 12; the number of quarter-sections examined during this period being 9,200. The party was organized and equipped so that lost time in moving from one township to another was reduced to a minimum. The transport outfit consisted of four horses, ten pack ponies, two wagons, and a democrat.

With the exception of certain settled areas such as those around McLennan, Donnelly, and Peace River, the country is generally covered with brush varying from park-like country to heavily wooded lands. Notwithstanding this, a considerable number of quarter-sections were found suitable for immediate settlement, lands which could be economically improved, or hay lands. Most of these have already been taken up.

The surface is largely covered by bush and the method of examination followed was that suitable to the conditions found. Practically the whole district has been surveyed, and the section lines and monuments fairly easy to find. Each day the chief and each of his assistants undertook the examination of a certain number of sections averaging between four and nine according to the nature of the bush. Each started from a monument on one of the lines and followed a course due east, west, north, or south, using a compass as a guide. Distances were recorded by counting the paces with a tally register, and elevations were recorded with a barometer. As each quarter-section was crossed the explorer checked up on the next monument and the closing errors in bearing and distance adjusted for all the trails, lakes, etc., crossed in that course. All essential topographical information was noted, elevations were recorded at frequent intervals, particularly at all points of noticeable rise and fall; the soil was tested at least every half mile and at changes in the character of the soil; the kind and quality of the water was examined, and the value of the land as well as the cost of clearing was estimated. Each section was crossed at least once and the information gathered, together with the data from former surveys for the boundaries of the section, enabled the surveyor to classify the land with a reasonable degree of accuracy.

After each day's travels the records were reduced and essential information plotted on township plans upon which had already been entered the information taken from the original survey records. A draftsman was employed for this work and his time was fully occupied. As soon as the plan of each township examined was completed it was sent to the head office where photostat copies were made and forwarded to the Soldier Settlement Board, which in turn forwarded them to the respective land offices for the use of prospective settlers.

On the completion of the investigation the surveyors were engaged for a few months preparing the classification maps. This not only entailed considerable drafting but also necessitated a closely checked examination of the records in the Land Patents Branch for the standing of the land in each township visited. The classification map was prepared and issued in time for the use of the settlers in the spring.

Party No. 2—Examination of lands between Smoky River and Pouce Coupé prairie.

The district covered by this party consisted of lands within fifteen miles on either side of the Edmonton Dunvegan and British Columbia railway from Smoky river to Spirit River and Grande Prairie and along the proposed route of this railway from the town of Peace River to Dunvegan.

PERSONNEL:

S. D. Fawcett, D.L.S., in charge.

Assistants—
W. E. Lumb, D.L.S.
L. A. VanSkiver, D.L.S., (part time).
W. E. Robinson, D.L.S., (part time).
T. A. McElhanney, D.L.S., (part time).
J. E. Roy, D.L.S., (part time).

Party—
3 employees.

Some 7,900 quarter-sections were examined during the season, and these lands were very similar to those examined by party No. 1. The organization, transport equipment, and method of examination were accordingly much the same. South of the town of Spirit River are located what are known as the Saddle hills which are very rough and are covered with thick, and in places, heavy timber. In order to facilitate the examination in these hills the usual method of investigation was replaced by a reconnaissance examination that is, each quarter-section was not visited but a sufficient number of courses were followed to enable the examiners to accurately describe the lands. Where such reconnaissance indicated the possibility of finding suitable lands these areas were examined in detail. This scheme was considered satisfactory because it was not important to locate small isolated areas of suitable lands as the difficulties a settler would experience in gaining access to them rendered them of little value as homesteads. Indeed it was considered preferable that settlement should be excluded for this reason. Two large areas of lands suitable for immediate settlement were located, one northeast of Spirit River in a district known locally as the Blueberry Mountains, and the other northeast of the town of Sexsmith. In addition, many areas suitable for grazing were noted, but only recommended for use of settlers on lands close by.

Work was commenced on June 10, but had to be brought to a close on November 2 when the chief and his three assistants were stricken with a severe attack of influenza. One of the assistants, Mr. Roy, died in the hospital at Spirit River.

TOPOGRAPHICAL SURVEY OF BOW RIVER FOREST RESERVE.

The photo-topographical survey of Bow River forest reserve which was begun last year was continued, the portion surveyed this year including that drained by Red Deer river and its main tributary, Panther creek. Adjoining the river in ranges 8, 9, and 10, the country is of the foot-hill nature and consists of rolling hills, but

PERSONNEL:

M. P. Bridgland, D.L.S., in charge.

Assistant—
L. E. Harris, D.L.S.

Party—
6 employees.

farther west it becomes very rough, the mountains rising above timberline. Glaciers are numerous and in many areas the original forests consisting of jack pine and spruce up to eighteen inches, are still standing. A large area of open land lies on Red Deer river near the mouth of Bighorn and Scalp creeks which was formerly used as a horse ranch. Trails are numerous, many of them being mere hunting trails but some are passable for wagons.

Traverses on which reference posts were planted at intervals were carried on in addition to the photographic work, the traverse courses following the streams and gravel bars as far as possible in order to avoid cutting.

No mineral except coal was found, some coal locations being staked on the west branch of Panther creek, between the forks and Windy cabin.

LEVELLING.

The amount of levelling of all classes carried out during the past year was 1,370 miles. About the same mileage of control levels was run as in the previous season but there was a decrease of more than 2,000 miles is subdivision levels due to the employment of only one party on that class of surveys as compared with ten parties in the preceding year.

No meridians or base lines were surveyed during the year, but levels were taken by one party employed on retracing base lines and meridians in Alberta and Manitoba. The leveller was simply a member of the party and had, therefore, to adapt his work and speed to the general progress of the other survey work, an arrangement which cannot develop nearly so good results as when the leveller has a party of his own.

Only one party was employed on subdivision surveys. This party levelled 274 miles. Such levels in the north are always commenced from the nearest base line levels and ultimately extend across the intervening area to the next base line. As each base line has been levelled independently of the next one, some discrepancy is bound to exist between the two, more especially near their westerly ends. The subsequent connection through subdivision is not suitable for adjustment so that temporary arrangements have to be made until some line of precise or secondary levels can be run so as to intersect and correct the base lines.

The number of miles of the various classes of levels run during the year and the total at the end of the year are as follows:—

	Season, 1918.	Total.
Precise levels	308	3,447
Secondary levels	407	1,405
Meridian and base line levels	381	12,268
Subdivision levels	274	6,967
Other lines of levels	....	321
Totals	1,370	24,408

(In addition, 60 miles were relevelled along the 25th base line west of the Fourth meridian.)

Party No. 1.—Precise levels from Weyburn to Govenlock.

This line of levels was run along the Canadian Pacific railway through the southern part of Saskatchewan from Weyburn to Govenlock.

PERSONNEL:

J. B. Alexander, D.L.S., in charge.

Assistant—
S. C. Akins.

Party—
5 employees.

The work was carried on in accordance with the general instructions for precise levelling. During the last part of May, and June and July the wind was exceptionally high, railway cars being overturned by it. This interfered considerably with the progress of the work, but after August 1 no time was lost on this account.

The elevations of 264 road allowances and the rail elevations of 44 railway stations passed were recorded. Ninety-eight permanent bench-marks were established, and connection was made to a line of levels along the Third meridian, to a line along the 2nd base line west of the Third meridian, and to a bench-mark established by the Irrigation Branch on the left bank of Frenchman river, about a mile east of Eastend station.

Considerable difficulty was experienced in building bench-marks of concrete as water had to be carried a mile in almost every case and gravel had to be shipped ahead in sacks.

Party No. 2—Secondary Levels along Township Outlines.

PERSONNEL:

R. H. Montgomery, D.L.S., in charge.

Assistant—
A. H. McIville.

Party—
7 employees.

As this line of levels was run along township outlines the same precision was not required as on a line of precise levels along a railway.

Work was commenced on June 12 at the 2nd base line and levels run south to the international boundary along the east boundary of range 13, west of the Second meridian. Levels were then taken north from the 2nd base along the east boundary of range 13 until the 11th base line was reached. Further progress was prevented by continuous bush, and operations were closed on October 15.

Two independent lines of levels were carried forward, one by the leveller and the other by the assistant.

The main line which included the record of the elevations of natural features was always run in a forward direction while the check line was run in the opposite direction, as much as circumstances would permit. The elevation of the surface along the line was recorded at least every quarter mile. Connections were made to three precise lines of levels, namely, at Halbrite on the Canadian Pacific railway; at Kelliher on the Grand Trunk Pacific railway, and at Kylemore on the Canadian Northern railway. Two lines of secondary levels were also connected, namely, the 2nd and 9th base lines. Elevations were also taken of the top of the rail in front of stations on nine different railways, besides the water level of six larger lakes and three rivers.

The permanent bench-marks consisted of a two-inch iron pipe four feet long with a brass cap and an iron foot-plate seven inches in diameter, planted on line, with the cap six inches above the ground and at intervals of approximately four miles. Sixty such bench-marks were placed. These were placed on the highest rise adjacent to a corner monument, but at no fixed distance from a corner.

The first part of the season was very windy and very hot, as high as 118° being recorded on the levelling rod. This greatly interfered with accurate work. A frost on July 24 was followed by a month of rainy weather during which much time was lost, but after August 24 no time was lost on that account.

Party No. 3—Secondary Levels along Base Lines.

PERSONNEL:

L. O. R. Dozois, D.L.S., in charge.

Assistant—
H. E. Read, D.L.S.

Party—
6 employees.

The 11th base line was levelled from the Fourth to the Fifth meridian, the datum used being the precise level lines along the Canadian Pacific railway crossed by the line in range 26.

The line was run westerly from the railway to the east shore of Gull lake and then easterly from the railway to the Fourth meridian.

The levelling of this base line closed a four-sided circuit of 414 miles, 246 of which are

precise levels, and the remainder secondary levels. The closing error of the circuit is 0·46 feet.

In accordance with the instructions governing secondary levels, permanent bench-marks were established at intervals of not less than 3½ miles and not more than 4½ miles. Ridges were chosen as sites for bench-marks in preference to hollows so as to minimize the disturbing action of frost. Bench-marks were invariably placed directly under wire fences, excepting in open country where fences had not been put up, to guard against accidental damage such as the impact of a wagon wheel.

The elevation of the ground was recorded at every quarter mile besides taking in all natural features, such as lakes, sloughs, streams, etc. The line crossed 125 sloughs only 35 of which contained water, and half the creeks were dry.

Branch lines of levels were run to five railway stations in the vicinity of the line.

The last work done was on November 29 and the party was disbanded the following day.

SETTLEMENTS AND TOWNSITES.

A topographical survey was made of the proposed townsite at the north end of the main Waterton lake. The lake which is about seven miles long extends for one-third of its length into the Glacier National park of the United States. Applications for the most valuable of the lots in the proposed townsite have already been received by the superintendent of the park.

A survey was also made of a settlement at Careajou point in tp. 101-19-5. A number of squatters are located there and the lots they occupy had to be surveyed for dealing with their claims.

MINERAL CLAIMS.

Continued activity in the mining camps of Manitoba has stimulated prospecting in the mineral areas and many claims have been surveyed during the year. The principal centres are at Flinflon and Schist lakes north of The Pas along the boundary between Manitoba and Saskatchewan where exceedingly rich copper ore is being developed. At Herb or Wekusko lake the mineral is gold-bearing quartz and in the Rice lake district east of lake Winnipeg gold-bearing quartz is also found. The returns of survey of sixty-four claims were submitted to the Department from these districts.

CONTROL OF SURVEYS.

(A. M. Narraway, D.L.S., Controller of Surveys.)

The controller left Ottawa on May 5 to undertake the field work. His first work consisted of an examination of several survey parties working in southern Alberta and southern Saskatchewan. This trip was made from Edmonton by automobile and occupied fifteen days.

The next trip was through the Peace River country, extending to Fort Vermilion, where parties engaged on land investigation and subdivision were visited. Returning to Edmonton he then visited parties working in Manitoba on resurveys and revision of water areas. Returning again to Edmonton several parties were visited in that vicinity engaged on school land surveys and the revision of water areas. The railway belt in British Columbia was next visited and the work being done by subdivision surveyors there examined.

In addition to the time spent in visiting survey parties the controller was called upon to devote considerable time to assisting the Soldier Settlement Board, two trips being made through the Peace River country during July and August accompanying the commissioners on trips of land investigation. Throughout September and the early part of October the controller organized two parties for the investigation of lands in the Porcupine and the Riding Mountain forest reserves.

These parties examined over 400,000 acres of land in these reserves which have since been withdrawn for soldier settlement.

From November 5 to November 22 the controller was confined to bed with an attack of influenza, which was then so prevalent throughout the western country, and upon recovery returned to Ottawa, reaching there on November 26.

During the winter months in addition to his usual duties he supervised the preparation of maps, sketches, and reports for the Soldier Settlement Board.

(G. J. Lonergan, D.L.S., Inspector of Surveys.)

The first work done by the inspector was the examination of the horses left in winter quarters from the previous season to see if they were fit for the season's work. This inspection was begun at Prince Albert on April 25 and on May 8 the inspection at Morley, Melville, and Lethbridge was completed. About a month was spent assisting surveyors to organize by helping them to secure members of their parties, purchasing supplies, and arranging for forwarding the same. Another month was spent collecting and disposing of horses and outfits that were no longer needed and on July 14 the inspection of the survey parties was begun.

Twenty-four parties in all were inspected, consisting of two parties investigating lands, four parties retracing school lands, three parties on miscellaneous surveys, two parties on subdivision, two levelling parties, and eleven parties on revision of water areas. As these parties were located at widely different points an automobile was used for travelling. The total distance travelled was about 5,000 miles, as much as 200 miles being covered in one day. The inspection consisted of an examination of the instruments used on the survey, the efficiency of management of the party, the examination of the work done, the transport, accounts, diary, field-notes, and other records, and a discussion of the methods used by other surveyors on similar work which proved to be advantageous.

The influenza epidemic put a stop to operations on November 19 as most of the towns were quarantined and further progress was rendered impossible.

ALBERTA AND BRITISH COLUMBIA BOUNDARY.

A departure was made from the method followed during the preceding years. While Mr. Wheeler ws employed on the same work as formerly Mr. Cautley located the boundry in the Peace River district.

PERSONNEL:

R. W. Cautley, D.L.S., Commissioner for Canada and Alberta.
A. O. Wheeler, D.L.S., Commissioner for British Columbia.

Assistant—
A. J. Campbell, D.L.S.

Party—
13 employees.

Mr. Wheeler made a photo-topographical survey of the boundary in Bush pass, Thompson pass, and the portion of Howse pass remaining unfinished from the previous season.

North of Howse pass the boundary describes a curve southward to Mt. Mummery and then follows a general northwesterly direction. The most striking feature of this section is the numerous bodies of ice and snow that are accumulated along the crest. On the eastern slope the forest is less dense with wide tracts of wide grassy slopes, and trails are numerous as they can be easily located. On the western slope the valleys are deep and narrow and difficult of access. The trails are little travelled and are almost obliterated by over-

growth and windfall. Much of the timber on both sides of the watershed is of merchantable value but the cost of transporting it to a manufacturing centre is prohibitive.

The necessity for locating the 120th meridian, the boundary between British Columbia and Alberta north of where the summit of the Rocky mountains crosses this line, was the rapid development of the Pouce Coupé district in that vicinity. In 1917 the longitude of a pier in tp. 77-14-6 was determined by a series of observations by an observer from the Geodetic Survey staff at Ottawa. This point was found to be 415·518 chains west of the 120th meridian. After the initial point had been established by Mr. Cautley he ran the boundary south through townships 77, 76 and 75 to a point about one and one-half miles south of the Grande Prairie and Fort St. John wagon road and telegraph line. Connection of this survey was made with the monuments of the Dominion land surveys. The temporary boundary formerly determined was found to be 18·304 chains too far west.

Since the object of the survey is to establish the location of the boundary on the ground as clearly as possible, monument sites were chosen with a view to their visibility from either direction of the line, subject to a maximum distance of 100 chains.

The district crossed by the boundary is well suited for farm settlement. The soil is fertile and the timber, while large enough for domestic needs is easily cleared. Stock would have to be fed for four or five months on account of the deep snowfall, but the heavy growth of wild grasses, pea-vine, and vetch furnishes excellent winter feed.

PART II—OFFICE WORK.

SUPERVISION OF FIELD WORK AND ACCOUNTS DIVISION.

The work of this division has to do principally with the preparation of the scheme of surveys to be undertaken and the drafting of instructions for surveys to the surveyors in charge of parties; the number of such instructions was 245. A record was kept of all requests for surveys, and investigations were carried out in each case as to the need of such surveys, the findings being recorded in tabulated form. One hundred and twenty applications were received. Two hundred and ninety-one other requests which had reached this office during the previous year were also investigated and the surveys recommended or refused as the investigation warranted.

The trend of settlement as indicated by departmental or other records was closely followed, as well as the development of mineral and other industries. The information thus collected was used in the preparation of the scheme of survey operations and the parliamentary estimates.

Forty-five applications for employment as surveyors, assistants, articled pupils or levellers were received and filed for reference in making recommendations to the Civil Service Commission for appointment to the various positions.

Accounts of surveyors for the expenditure connected with their surveys numbering forty-one were examined and audited and when found satisfactory were passed for the approval of the Surveyor General. Eight hundred and eighty-two additional accounts for the general expenses of the branch were audited and passed or rejected. The total expenditure was in the neighbourhood of $500,000.

Fourteen claims for compensation for accidents, sickness, loss by fire, etc., were reported upon for the consideration of the minister.

As survey outfits are owned by the Department, a record was kept during the year of their distribution, of repairs, renewals, purchases, sales, loss or discard of parts, etc. The correspondence in this connection with surveyors and warehouse keepers was extensive.

The attendance, sickness, and absence records were kept for the entire staff of the head office in Ottawa, numbering over 150, as well as similar records for the field staff while at office work in Ottawa preparing notes and returns of their surveys.

SURVEYS INFORMATION DIVISION.

Although less new township subdivision surveys were carried on than during the preceding year the work in other directions increased. Resurveys in connection with the sale of school lands were undertaken for the first time while the number of small miscellaneous surveys was considerably greater. As much more work is involved in preparing the data for resurveys than for new subdivision, the number of plans sketches, and maps prepared for the instruction of the surveyors in the field was nearly fifty per cent greater than for the previous twelve months.

The technical correspondence relating to surveys carried on with other branches and departments of the federal and provincial governments, with surveyors, law firms, settlers, etc., fell off somewhat during the war on account of the decreased settlement in the western provinces. Since the cessation of hostilities, however, it has steadily increased. The questions dealt with are those of conflicting surveys, disputed boundaries, etc., and the work involves the preparation of a considerable number of plans and sketches. A large number of sketch plans were also prepared for the various provincial governments in the western provinces for the information of their surveyors in the field.

In addition to the annual report of the branch, "The Description of and Guide to Jasper Park" was issued during the year. This guide book for tourists which is based on photographic surveys by M. P. Bridgland, D.L.S., is profusely illustrated and is an unusually fine specimen of the printer's art.

EXAMINATION OF SURVEY RETURNS DIVISION.

Owing to the increasing intricacy of surveys from year to year and the reduction of the staff due to war conditions, it still required the full year to complete the office work of the field season.

Fewer stadia surveyors than in former years assisted with the preparation of official plans of their work.

Since all the surveyors have been required to submit their original records of a survey along with the copies that are examined for filing in this department the examination of the survey returns has proceeded more satisfactorily. A higher standard of work in the field has developed; the final returns submitted for examination have been made with greater care and the examiner is able to refer to the original records for the explanation of all errors found in the final returns, for information omitted, or to correct discrepancies, instead of writing to the surveyor for a more or less satisfactory explanation.

The progress report received from surveyors to the number of one thousand and one were examined.

Owing to the increased activity in the mining districts of Manitoba the returns of survey of sixty-four mineral claims were received for examination.

Provincial road plans to the number of 479, having a total mileage of 688, were received and examined. The several thousand Saskatchewan road plans previously received did not bear the number under which they are registered in the respective Land Titles offices. The registration numbers have been obtained from the provincial authorities and are being added to the plans filed here. This work has not yet been completed. Thirty railway plans comprising 433 miles of line were examined. In several cases more than one copy of the plan was submitted for examination, the total number of plans being 48 and the gross mileage 796.

The proportion of the British Columbia-Alberta boundary dealt with was the delimitation of the meridian of 120° longitude in the Peace River district across townships 75, 76, and 77 range 13 west of the Sixth meridian.

Some 650 requests for information concerning surveys from other branches of the department and from the public were dealt with, in connection with which 275 sketches were prepared and 1,500 areas were calculated and furnished.

DRAFTING AND PRINTING DIVISION.

Township Plans.

These constitute the largest part of the work. During the year 772 such plans have been prepared. Almost every step in the process has been standardized and systematized so that the simple, regular township plan presents no difficulty and is quickly dealt with. Printed forms are used requiring only the addition of topography and the description and numerical data. Townships in part irregular are copied on pale blue forms which serve as a guide for drawing such parts as are regular. The blue form does not photograph where it is departed from in the irregular portions.

Miscellaneous Surveys.

These comprise settlements, Indian reserves, timber berths, villa lots, subdivisions, and townsites. Nine such plans were dealt with during the past year.

Special Editions.

When plans of a small portion of a township are urgently needed it is sometimes advisable to issue a special edition of just enough copies to allow those directly interested to obtain one each. Usually six copies are sufficient and this number is made by hand. Sixteen plans have been put through in this way.

Type Printing Jobs.

Almost every map or plan requires some printing from the small type press used for this purpose, the titles and foot-notes being added in this way. Besides this regular work the press is used to print the type for many forms and tables for office use, such as sketch forms, index cards, field books, forms for calculation, and tables of results. The advantage of printing this class of work by the lithographic process lies in the fact that while the type matter in such jobs can be done easily enough on the type press the ruling is usually too complicated. Sixty such jobs were printed during the year.

Miscellaneous Jobs.

All classes of work arising in the branch which call for either drafting, stamping with type, or printing with type on the type press naturally come to this division for execution. These jobs are difficult to classify because they are so varied in character. They include the following: 13 commissions for Dominion Land surveyors; 2 certificates for articled pupils; extending graduation on 51 levelling rods; 12 miscellaneous tracings; 6 plans to accompany orders in council; mounting 86 maps; numbering and indexing 1,045 maps for the Geographic Board of Canada; one drawing of apparatus; and 72 other miscellaneous jobs.

Distribution of Sectional Maps and Files.

In connection with the sectional maps of Manitoba, Saskatchewan, Alberta, British Columbia, and Yukon Territory which are stored in the floor above the drafting room, the following work was attended to:—

1. When new editions were printed, copies were mailed according to mailing lists.
2. When bound volumes of maps were required, the maps were arranged and prepared for shipment to the bindery.
3. Requests for maps were attended to as received.
4. Stock was taken monthly and steps taken to replenish where necessary.

In the same storeroom are kept old files of correspondence. These were given out as called for.

SECTIONAL MAP DIVISION.

At the beginning of the year 129 sheets of the sectional maps had been compiled. Fifteen of these were revised and eight others are in hand. Three new sheets, namely, Dillon No. 467, Methy No. 517 in northern Saskatchewan, and Chipewyan No. 666 in northern Alberta are also in hand.

The method heretofore used of making the same projection do for four sectional maps has been abandoned as lacking in accuracy and a separate projection showing township outlines is now made for each sheet. The information gathered from township plans, sketches, field-books, reports, railroad plans, road diversion plans, etc., is all reduced to the same scale, namely, one inch equals two miles and transferred to the projection. The necessary adjustments are made and the whole finally inked in. This compiled sheet is then photographed on the same scale and a number of copies are made in blue lines on heavy Joynsen bond, and in black lines on light Joynsen bond. These latter are sent to the Levelling Office at Calgary where contour lines are marked on them if the information in regard to levels in the district warrants it. When the plan with contours has been returned from Calgary the whole is ready to place in the hands of the draftsman who uses as the basis for the finished copy one of the blue line copies on heavy paper above referred to.

The Stanley pantograph which has been in use for many years was replaced by an Ott Suspended Precision pantograph,—bars thirty-eight inches, with which reductions and enlargements can be made in all ratios between 20·1 and 1·1.

The township reports received from the surveyors for the year from April 1, 1917, to March 31, 1918 were prepared and printed in four pamphlets containing 112 pages.

The examination of the returns of surveyors with a view to preventing duplication of names of topographical features, to eliminate unsuitable names and to establish spelling approved by the Geographic Board, has been continued.,The returns examined consisted of 29 general reports, 284 field-books, and 2,033 plans and sketches. The necessary correspondence which was considerable was drafted in this division.

A change has been made in the method of producing the original drawings of sectional maps by having the lettering stamped with printer's type instead of being written by hand. This method is satisfactory and it relieves the draftsmen of a lot of slow tedious work thus economizing their time to a considerable extent: three young ladies have been added to the staff to do the stamping.

The appearance of the sectional maps has been much improved by applying, as far as practicable, the "Resolutions of the International Map Committee."

In addition to the sectional maps, some of the interprovincial boundary maps and an ethnographic map of Europe were drawn for photozincographic printing.

SPECIAL SURVEYS DIVISION.

Base Line Surveys.

Instructions were prepared for the surveyors employed during the season on base line surveys and the usual field correspondence and checking of the closings carried out. As the field work for 1918 included the establishment of a portion of the Manitoba-Saskatchewan boundary line through the centre of a rich mining district north of lake Winnipeg it was necessary that the preparatory work in the office should be carefully done. In the high latitudes in which recent base line surveys have been made it is necessary, in order to make the computations in such cases with the required accuracy, to have an intimate knowledge of all the surveys in the Dominion Lands system to the south as they are on the ground. The office work which has for some time been carried on in connection with the investigation of base lines and positions of corners throughout the Dominion Lands Surveys system becomes in such cases of special value.

Retracement of Old Bases and Meridians.—The office work in connection with the retracement of 354 miles of old base lines and meridians involved the drafting of instructons for the work, the field correspondence during the season, the examination of the final returns, and computing the positions of monuments in the Dominion Lands System from the retracement returns.

Previous to 1918 the geographical co-ordinates of monuments in southwestern Alberta were not known with as high a degree of accuracy as those in other portions of the system. The retracements made in that section of the country during the season have produced excellent results, and the positions of corners have now been accurately determined.

East of the Principal meridian deflections were known to exist in portions of each of the two bases. Positions of monuments on the ground therefore differed considerably from those recorded in the survey returns. The retracements made during the season over these two lines have corrected this condition.

Uncertainty as to whether or not a slight bend existed in the Fourth meridian to the north of township 88 was removed by the retracement made over a portion of the line. The Fourth meridian forms the boundary line between the provinces of Saskatchewan and Alberta. It is also the central meridian of the Dominion Lands Surveys system. It was therefore important that no doubt should exist concerning the positions of monuments thereon. The retracement returns show that the uncertainty was caused by slightly long chainage on portions of some of the bases west of the Fourth meridian which run through a district the nature of which renders accurate survey operations most difficult, and that no bend exists in the meridian.

Astronomical Work.

Azimuth Observations.—All the azimuth observations taken on the survey of governing lines during the season of 1918-19 have been examined and tabulated and the bearings in the field notes compared with the results.

The survey work was of a miscellaneous nature, comprising surveys of base and meridian outlines; the survey of the meridian of 120° west longitude which is the boundary between British Columbia and Alberta in that district; the retracement of a part of the Fourth meridian which is that of 110° west longitude; and the retracement of various township outlines in Manitoba and Alberta. Altogether about 280 observations were taken at 112 stations. This is a small number for the number of men employed—four—but two of them were on line work only a short time.

The average range in seconds between the different observations at one station, over all the observations, is eleven seconds.

A comparison of the observations and line work on the survey of new meridians and base lines, with the observations and line work in the carrying on of retracement surveys, makes it evident that such lines as initial meridians where no deflections occur and base lines where the deflections are not numerous and are regularly provided for are run much more accurately than retracement surveys where deflections frequently occur to keep within old cuttings or to follow the old lines. Lines can be produced much more accurately in this way than is possible by deflections by means of angles or offsets, and surveyors should use every precaution in the turning and reading of angles and in the measurement of offsets and the setting of offset pickets.

Retracement surveys to have the same value in accuracy as the survey of governing lines should be made as far as possible along direct lines and in easy districts where few deflections will be necessary.

Astronomical Field Tables.—The four sets of tables for the position of Polaris and the table giving the right ascension and declination of the sun were computed and printed as usual. Two of the former give the azimuth of Polaris for every twentieth township while the other two give it for every second degree of latitude up to 56°. The periods covered by these tables are:—

October 7 to December 18, 1919,
August 16 to October 8, 1920,
June 2 to August 18, 1921
and
December 18, 1919, to March 11, 1920,
March 12 to June 2, 1921.

Magnetic Work.

In 1918, thirty surveyors were instructed to observe for magnetic declination, and each surveyor was supplied with a list of stations founded previously in the neighbourhood of his work, at which repeat observations might be made. Some thirteen hundred declination observations including over two hundred and fifty repeat observations were obtained during the season. On the surveys of R. C. Purser, D.L.S., and E. S. Martindale, D.L.S., observations for magnetic dip and total force were taken at twenty-seven stations including twenty-two repeat stations founded by the Meteorological Service of Canada, the Carnegie Institution of Washington, and the Dominion Observatory.

These observations for magnetic dip and total force with the results obtained from the repeat observations were published in the May-June, 1919, number of the Journal of the Royal Astronomical Society of Canada. The results obtained in 1917 at some twenty-six stations were published in the April, 1919, number of the same journal.

These repeat observations have enabled us to bring all our data up to date and compile a set of isomagnetic charts as follows:—

1. Lines of Equal Magnetic Declination and of Equal Annual Change in Western Canada for 1917.0.
2. Lines of Equal Magnetic Inclination in Western Canada for 1917.0 and of Equal Annual Change between 1912.0 and 1917.0.
3. Lines of Equal Magnetic Horizontal Intensity in Western Canada for 1917.0 and of Equal Annual Change between 1912.0 and 1917.0.

All observations for declination, dip, and force have been reduced to International Magnetic Standard by direct comparison at the beginning and end of the season with the magnetic standards at the Magnetic Observatory, Agincourt, by courtesy of the Director of the Meteorological Service of Canada. The declination observations have been reduced to mean-of-month by direct comparison with the continuous declination magnetograms of the Magnetic Observatory of Meanook, Alberta, supplied by the Director of the Meteorological Service of Canada.

Surveys Laboratory..

Tests were made of 78 D.L.S., transits, 12 levels, 2 compasses, 108 aneroid barometers, 6 surveying cameras, 49 watches.

Of the 49 watches submitted to test 25 were for the regular test and 24 for the short test. Of the former 2 stopped during the test, and of the 23 remaining 6, that is, 26 per cent passed the test.

During the year 77 stadia correction cards were computed, printed and issued to the surveyors.

At the Comparator building, the lengths and weights of 14 tapes of all kinds were determined. Also 301 standard tapes and 92 standard wires were compared with the base.

The comparator base was verified 54 times by the standard four-metre rule.

Two comparisons of the standard four-metre rule with the standard one-metre rule were made.

The work of the Surveys Laboratory is given in more detail on page 36 of this report.

Surveying instruments.

Repairs were made to 48 transits, 32 levels, 9 stadia rods, 10 levelling rods, 7 aneroid barometers, 8 kodaks, 4 surveying cameras, 4 instrument cases, 8 tripods and 56 miscellaneous instruments.

Fourteen sidereal watches were overhauled and readjusted.

In connection with the inspection of instruments and outfitting of surveyors, 194 cases aggregating 5 tons, (10,044 pounds) were shipped from this office ,and 182 cases weighing 9,939 pounds received.

A statement of instruments on hand on March 31, 1919 showing also the instruments purchased and sold during the year is given in Appendix 5 of this report.

General Work.

C.P.R. traverse retracement.—The field returns of the C.P.R., traverse retracement which were checked during the past year disclosed an error of 5·55 chains in latitude and 5·55 chains in longitude in the original C.P.R., traverse survey in tp. 24-10-5. In consequence of this error the surveys made along the line of the railway through ranges 10 to 19 are in erroneous positions, and it became necessary to fix on the most suitable method of adjusting the surveys for this error. In determining where and in what manner the adjustments should be made between the surveys already carried out and those which may in the future approach or proceed from them, it seemed advisable to be guided to some extent by the topography, and have the adjustments made along lines where the country is most mountainous, and where the excesses or defects of chainage and deflections of adjusting lines would cause less inconvenience than they would if the adjustments were made in valleys suitable for agricultural purposes. In proceeding by this method about 50 townships were involved. The positions of lines already surveyed in these townships were first sketched in on a plan, and with this as a basis, the positions of lines which may in the future be surveyed to or from them was worked out on the plan according to the method already explained. The amounts by which the adjusting lines should vary from theoretic in bearings and chainages were then computed in detail for each of the townships in the block affected.

Alberta—B.C. boundary sheets.—Computations were made for determining latitudes and longitudes for a number of the sheets issued by the Interprovincial Boundary Commissioners engaged on the survey of the Alberta-British Columbia boundary. This involved considerable work in some cases, as at that time the southern portion of the Fifth meridian had not been retraced and the computations had to be carried through from several directions and from comparatively distant points in order to obtain a check on the figures furnished for the boundary sheets.

Miscellaneous.—The subject of survey posts received some consideration in regard to new designs, methods of planting, etc., for the future. Some correspondence was exchanged with the Department of Lands Forests and Mines of Ontario, and the Department of Public Works of Manitoba in regard to survey posts they intended having made. Samples of the work in different stages of completion and an explanation of the processes of manufacture, inspection, and planting were supplied. Engraved brass plates for concrete monuments were supplied for the Alberta-British Columbia Interprovincial Boundary Survey.

A general review is being made of methods of rapidly solving the astronomical triangle for time-azimuths and altitude-azimuths, covering tables, solar attachments, calculating devices, slide rules, abaci, nomograms, etc. This interesting matter has been greatly delayed, but will now receive more consideration.

A nomogram was designed and published entitled "Nomogram Showing Duration of Sunlight for Every Day in the Year for All Places in Canada between latitude 42° N. and 60° N." An explanation and discussion of this was inserted in the Journal of the Royal Astronomical Society of Canada, 1919. Investigations were made concerning hours of sunshine, hours of solar insolation, meteorological conditions, etc., of the Peace River district in comparison with localities farther south, for the agricultural season.

Mechanical drawings were made covering a special sectional stadia rod, and the rod was manufactured.

PHOTOGRAPHIC OFFICE.

The surveyors on the more level ground realize the importance of carrying a small camera with their outfit and for this season's work they were furnished with a small size pocket kodak with a Tessar lens. The most important pictures will be enlarged to about 5″ x 7″ if desired for publication, while the smaller ones will be attached to the surveyor's report.

In the photo-zincographic department the remaining staff was worked to capacity owing to further calls for military service; nevertheless the gross amount of work is slightly higher than the previous year.

The demands of other branches on our office have continued to increase: they cannot be fully met until the staff is restored to normal strength.

The average number of township plans and sectional maps was put through, and also a considerable number of reductions for projection for the engraving department of the Printing Bureau.

A number of line etchings were made for various departmental publications.

Details and figures of the work executed are given in appendix No. 4.

LITHOGRAPHIC OFFICE.

A comparison with the previous year shows a decrease of about twenty per cent in the number of maps, plans, and forms, a decrease of about thirty-eight per cent in the number of copies, and a decrease of about fifty per cent in the number of impressions. In view of the scarcity and enormous cost of paper the number of copies was reduced to a minimum. The number of impressions depends on the number of colours. The reduction of fifty per cent was obtained by omitting colours when possible and substituting some other distinctive mark.

The number of township plans and sectional maps printed by this division during the year was reduced to a minimum and the number of copies of each plan and map was also reduced.

Sundry jobs increased over the previous year, due chiefly to the printing of numerous small reference maps and plans used by compilers and draftsmen, the number of copies of each never exceeding ten.

Forms used on surveys and at the head office, skeleton plans to be inked in by the draftsman, the index map, a few topographical and other maps, and charts of reorganization for this and many other branches were also printed.

The cost of this work estimated at Printing Bureau rates, or what it would have cost the Government to have had the work done through the Bureau is shown in the following table as well as a comparison with the cost of the previous year.

Item.	Number printed.		Cost at Bureau Rates.	
	1917-18	1918-19.	1917-18.	1918-19.nn
			$ cts.	$ ctx.
Township plans	1,036	736	35,506 90	22,619 50
Sectional maps	66	57	5,344 11	4,575 30
Sundry jobs	173	232	20,590 46	10,963 71
	1,275	1,025	61,441 47	38,158 51

Adding to this the cost of the paper and percentage for handling allowed by the Bureau ($4,174.45), would give a total of $42,332.96.

The actual cost to the department for maintenance of this division compared with that of last year is as fallows:—

—	1917-18.	1918-19.
	$ cts.	$ cts.
Process photographers	7,212 92	7,499 91
Lithographers	23,922 77	24,056 44
Total	31,135 69	31,556 35
Value of work at Bureau rates	61,441 47	42,332 96
Profit	30,305 78	10,776 61

The above figures do not take into account the saving in the preparation of originals for reproduction. If the printing were done outside, the originals would have to be more elaborate.

It will be observed from the above schedules that the cost of maintenance of the division varies very little from year to year, as the staff generally remains the same, and the amount of paper used from year to year is fairly uniform.

The difference of almost $20,000, however, in the value of work at Bureau rates is explained by the fact that in 1917-18 a great number of high class maps were printed of Jasper Park, surveyors sketch maps, and maps for the Geographic Board index, the work on which was very expensive, a dozen of the maps running as high as $70 each. This accounts for the drop in profit from $30,305.78 to $10,776.61.

GEOGRAPHIC BOARD.

The Geographic Board, of which the secretary is an officer of the Department of the Interior, has published a bulletin with an illustrative map on the "Nomenclature of the Mountains of Western Canada" and a "Catalogue of the Maps in the Collection of the Geographic Board." So great has been the demand for this catalogue that a second edition, which will comprise almost all the modern maps of Canada, and many of the older ones, is in preparation.

The Board has revised its rules of nomenclature and these with its decisions on geographic questions since March 31, 1917, will be published in a report that is now in the press. This is also expected to contain a list of Micmac place names in the Maritime Provinces.

A report on Map Publication in the Departments of the Dominion Government was prepared by the Board at the request of the Joint Committee on Printing of Parliament.

BOARD OF EXAMINERS FOR DOMINION LAND SURVEYORS.

The Board of Examiners for Dominion Land Surveyors held two meetings.

The first was a special meeting lasting from April 29, 1918 to May 31, 1918, inclusive, during which examinations were held at Ottawa, Vancouver, Calgary, and Winnipeg.

The second was the regular annual meeting called for by section 9 of the Dominion Lands Survey act. It began on Monday, February 10, 1919 and lasted until March 13, 1919. During this meeting examinations were held at Ottawa, Winnipeg, Edmonton, and Vancouver. The total number of candidates for examination was thirty. Of these seventeen tried the full preliminary examination, one tried the limited preliminary examination, nine tried the final, and three the examination for Dominion Topographical Surveyors.

Three candidates were successful at the preliminary examinations as follows:

De Stein, Joseph Nicholas, Calgary, Alberta.
Fry, Eric S., Vancouver, B.C.
Younger, Harry Robert, Ottawa, Ont.

Three candidates were successful at the final examination as follows:—

Burchnall, Ralph Parker, Calgary, Alberta.
Markham, Edwin, Winnipeg, Manitoba.
Bayly, Gilbert St. John, Edmonton, Alberta.

One candidate was successful at the examination for Dominion Topographical Surveyors, namely:—

Bingham, Harold Carr, Calgary, Alberta.

The time of the Board during the meetings was largely taken up with the reading and valuation of the candidates' answer papers. Complete sets of question papers to be used at the following examination were also prepared. In addition to this the evidence submitted by candidates at the final examination in proof of their eligibility therefor had to be examined. This evidence consisted of certificates of Provincial Land surveyors and of affidavits of service under articles of apprenticeship.

Four commissions were issued to candidates who had passed the final examination and had furnished oaths of office and allegiance and bonds for the sum of one thousand dollars as required by section 25, of the Dominion Lands Survey's Act.

Four certificates of preliminary examination were issued to successful candidates who had complied with the requirements of the law.

One certificate of Dominion Topographical Surveyor was issued to a candidate who had successfully passed the examination and complied with the requirements of the law.

Section 35 of the Dominion Lands Surveys Act provides that every Dominion Land Surveyor shall be in possession of a subsidiary standard of length. During the year eight new standards were issued to surveyors and two measures which had previously been supplied were tested by the Department.

SURVEYS LABORATORY.

Several improvements and additions to our existing apparatus have been made. The main development has been extending the capacity and usefulness of the aneroid testing section. The large number of aneroids now being used in the field has necessitated the installation of larger and more efficient apparatus to deal with the increased amount of testing work. The following is a brief summary of the activities of the Laboratory.

Metrology.

The base has been periodically verified and the usual comparisons made of the laboratory standard tapes. Pending the arrival of the 1^m rule which was detained at the International Bureau, Paris, owing to war conditions, two invar tapes were taken to the Bureau of Standards, Washington, for standardization. These tapes were verified on the Surveys Laboratory base before and after the Washington determination and thus a check was obtained on the length of the laboratory 4^m rule. In the coming year it is hoped to institute periodic comparisons between the 1^m and 4^m rules. In this connection it might be mentioned that an order has been placed with the Société Genevoise d'Instruments de Physique for two additional 1^m rules, one of pure nickel and the other of a 42 per cent nickel-steel alloy.

Transits, Levels, Etc.

The usual amount of routine testing work has been dealt with in this section.

Thermometers.

The apparatus of this section is being considerably developed. A pressure coefficient apparatus has been procured and working drawings were prepared for a hypsometer for determining the steam points of thermometers. This apparatus, which has recently been received, is of the International Bureau type and similar to that in use at the large physical testing laboratories. It is hoped that it will soon be possible to procure a platinum resistance thermometer for use as a standard in place of the standardized thermometers at present used.

Aneroids.

As mentioned previously a large amount of work has been thrown on this section due to the increased number of aneroids being used in the field. The most important addition to the aneroid testing apparatus is a thermal chamber which is used to contain the receivers during the temperature tests. This chamber has thick insulating walls and contains coils for heating and cooling purposes and maintaining the temperature constant for any desired period. Circulating fans within the chamber thoroughly agitate the air and maintain a uniform temperature. The aneroids are read through well-fitted windows in the top and front of the chamber.

In the past it has been found that considerable difference occurs in the quality of the aneroids purchased. For this reason the laboratory has drawn up a set of specifications and all aneroids now purchased are supplied on the understanding that any which fail during test to attain the tolerances, set by the laboratory, will

not be accepted. By this means a better average class of aneroids will be supplied to the surveyors. A bulletin entitled "The Testing of Aneroid Barometers at the Laboratory of the Dominion Lands Surveys" has been published. This gives a brief account of the characteristics of aneroids and also describes the tests as conducted at the Laboratory.

Watches.

The greater portion of the watch testing apparatus at the Surveys Laboratory has been transferred to a new gallery built in the testing room. Not only does this relieve, to a limited extent, the congestion in the room but it also allows the temperature chambers, the relays, and the chronograph to be grouped closely together, thereby greatly facilitating the daily comparisons with the standard clock.

There are many instances where the owner of a watch finds it at least inconvenient to be deprived of his timepiece for the two months covered by our regular class A test. Appreciating this fact, we have devoted part of the year in developing a short form of test which will be sufficiently accurate to give a fair idea of the qualities of a watch, where such refinements as are necessary in a class A watch are not required.

Twenty-five watches were submitted to the regular class A test and twenty-four to the short test. Six, that is 26 per cent, passed the regular test.

The results of the trials of the watches which passed are tabulated herewith.

RESULTS OF WATCH TESTS.

(Bureau of Standards Method.)

Name.	Maximum values allowable.	Waltham Watch Co.						Means.
Number of watch		T.S. 268	18091055	18091072	18028539	18028518	18028529	
Escapement, balance spring, etc		D.r., g.b., l.e., s.o.	D.r., g.b., l.e., s.o.	D.r., g.b., l.e., s.o.	D.r., g.b., l.e., s.o.	D.r., g.b., l.e., s.o.	D.r., g.b., l.e., s.o.	
Mean deviation of daily rate	0s.75	0·69	0·32	0·36	0·53	0·27	0·44	0·44
Mean of daily rates for each pair of position tests		−0·39	+5·51	−0·57	+3·68	−7·21	−7·21	4·10
Deviation for change of position	3s.0	2·38	1·61	1·32	0·90	2·21	2·17	1·76
Maximum difference between mean rates of position tests	10s.0	9·66	4·85	5·10	3·58	7·42	8·06	6·44
Difference between mean rates of P.U. and D.U. positions	5s.0	0·75	4·85	0·39	0·43	4·49	1·18	2·01
Difference between mean rates of D.U. and D.D. positions	4s.0	3·70	0·34	0·12	1·31	2·53	1·32	1·55
Progressive change of rate for position tests	3s.0	+0·92	+0·28	+0·49	−0·28	−0·15	−0·93	0·51
Recovery of rate	6s.0	+0·07	−0·83	+1·87	−1·50	+0·17	−2·90	1·22
Change of r. per 1° C.—								
A								
4:4–18:3		−0·09	+0·02	−0·31	+0·03	−0·37	−0·34	0·19
B								
4:4–32:2	0s.20	+0·09	0·14	−0·14	+0·19	−0·17	−0·17	0·15
Algebraic difference between A and B	0s.3	0·18	0·12	0·17	0·16	0·20	0·17	0·17
Isochronism error	3s.0	+0·7	0·0	+2·4	−1·4	+1·2	+2·1	1·3
Relative performance		32·2	54·3	50·6	46·2	44·4	35·3	

D.r. = Double roller; g.b. = Going barrel.
l.e. = Lever escapement; s.o. = Single overcoil.
P.U. = Pendant up; D.U. = Dial up; D.D. = Dial down

For the above six watches, the average variation of daily rate for the position and temperature tests was as follows:—

Position Tests.						Temperature Tests.		
P.U.	P.R.	P.L.	D.U.	D.D.	.....	D.U.	D.U.	D.U.
82 F.	82 F.	82 F.	82 F.	82 F.	.....	42 F.	67 F.	92 F.
0·46	0·38	0·42	0·51	0·48	.....	0·44	0·33	0·46

The smallest mean division of daily rate was 0s.27 as compared with 0s.38 in 1917-18 and 0s23 in 1916-17.

The average errors for position were:

P.U.	P.R.	P.L.	D.U.	D.D.
2·11	2·72	2·02	1·07	1·23

The smallest mean deviation for change of position was 0s90 as compared with 1s20 in 1917-18, 0s66 in 1916-17, and 0s75 in 1915-16.

Comparing the average errors with those for the last three years we have the following:—

	1916	1917	1918	1919
Average mean deviation of daily rate	0·49	0·36	0·43	0·44
Average mean deviation for change of position.....	2·08	1·79	1·80	1·80
Average change of daily rate per degree centigrade.....	0·09	0·09	0·06	0·15

The average isochronism error for these watches was 1s3; for the average marks obtained, 43·8; the highest, 54·3.

Of the nineteen watches which failed, two or 10·5 per cent stopped before the test was completed; four or 21 per cent failed in temperature correction only; and two or 10·5 per cent in one of the position tests only; the remaining eleven or 58 per cent failed to pass more than one tolerance.

LEVELLING DIVISION (Calgary).

The work in the Calgary office is of a varied nature, the chief task each year being to examine, check, and record the results of the previous field season. Levels, however, are becoming so extensive and their component parts so interwoven that an important part of the whole work is assimilating new lines of levels into the whole system. Every new line which intersects previous lines immediately disturbs the previous order, for levels, even the most precise are never final. This disturbance may be so small that all that is required is to note it carefully in the records, or it may be so great that the revision of some former line is called for. In the latter event the practice has always been to revise at once throughout and not to be content with inserting a note that a certain correction must be applied.

About 8,000 miles of records were entirely revised from the field books during the year, frequently applying a new datum or a new adjustment throughout.

The contouring of the sectional sheets has been continued, twelve sheets being contoured and returned for printing. The work done in the office includes the reduction of all elevations direct from the field books of the levellers and their entry on the sheets together with the compilation of information regarding elevations from every other source than this branch, the latter being proportionately small.

The general work of the office included the examination of nearly all the level books of fourteen parties who took levels in the field the previous year, and the co-ordination and recording of the results; the close supervision of the three levelling parties who were employed running control lines in the field; and much miscellaneous work in supplying surveyors of this branch and other organizations with elevations for their particular requirements.

APPENDIX No. 1.

AREA OF SURVEYED LAND IN MANITOBA, SASKATCHEWAN, AND ALBERTA.

Period.	Acres.	Number of Farms of 160 Acres each.
Previous to June, 1873	4,792,292	29,952
1874	4,237,864	26,487
1875	665,000	4,156
1876	420,507	2,628
1877	231,691	1,448
1878	306,936	1,918
1879	1,130,482	7,066
1880	4,472,000	27,950
1881	8,147,000	50,919
1882	10,186,000	63,662
1883	27,234,000	170,212
1884	6,435,000	40,218
1885	391,680	2,448
1886	1,379,010	8,620
1887	643,710	4,023
1888	1,131,840	7,074
1889	516,968	3,231
1890	817,075	5,106
1891	76,560	476
1892	1,395,200	8,720
1893	2,928,640	18,304
1894	300,240	1,876
1895	406,240	2,539
1896	506,560	3,166
1897	428,640	2,679
1898	859,840	5,374
1899	1,022,720	6,392
1900 (first 6 months)	735,480	4,596
1900–1901	1,603,680	10,023
1901–1902	2,553,120	15,957
1902–1903	6,173,440	38,584
1903–1904	12,709,600	79,435
1904–1905	10,671,520	66,697
1905–1906	4,973,920	31,087
1906–1907(9 months)	3,819,700	23,873
1907–1908	6,123,040	38,269
1908–1909	7,412,870	46,330
1909–1910	7,423,200	46,395
1910–1911	5,683,200	35,520
1911–1912	5,146,080	32,163
1912–1913	5,155,520	32,222
1913–1914	5,193,280	32,458
1914–1915	4,484,960	28,031
1915–1916	3,112,640	19,454
1916–1917	2,221,280	13,883
1917–1918	1,323,360	8,271
1918–1919	91,520	572
	177,675,105	1,110,464

APPENDIX No. 2.

SCHEDULE of surveyors employed and work executed by them:—

Akins, J. R., St. Catharines, Ont.—
Retracement of the 2nd base line across ranges 1 to 9, the 4th base across ranges 1 to 7 and the east outline of townships 5 to 7, range 7 all east of the Principal meridian; the Second meridian across townships 25 to 32; the 2nd base line across ranges 15 to 30, the east outlines of townships 1 to 4 range 28 and townships 9 to 12 range 29, the 3rd and 4th base lines across ranges 29 and 30 all west of the Fourth meridian; and the Fifth meridian across townships 5 to 8, 13 and 14.

Alexander, J. B., Calgary, Alta.—
Precise levels along the Canadian Pacific railway from Weyburn to Govenlock, 308 miles.

Bennett, G. A., Tillsonburg, Ont.—
Stadia surveys in tps. 37 to 40-25-3; tps. 37 to 41-26-3; tps. 24, 25, 26 and 37 to 42-27-3; tps. 24, 25, 26 and 38 to 42-28-3; tps. 24, 25, 26, 37 and 38-29-3; tps. 34 to 37, 39 and 40-1-4; tps. 34 to 37-2-4; tps. 34 to 38-3-4; tps. 34 to 36-4-4; tps. 34 to 37-5-4; tps. 34 to 37-6-4; tps. 34 to 37-7-4; tps. 33 to 35-8-4; tp. 34-9-4; tps. 34 and 35-13-4; tp. 34-14-4; tps. 32 and 33-16-4; tps. 32 to 34-17-4; tps. 33 and 34-18-4; tp. 34-19-4.

Blanchet, G. H., Ottawa, Ont.—
Retracement of the Fourth meridian from the 23rd base line to the 27th base line. Stadia traverse and exploration of lakes in the area between Churchill and Clearwater rivers.

Boulton, W. J., Wallaceburg, Ont.—
Stadia surveys in tp. 32-19-4; tps. 31, 32, and 33-20-4; tps. 29 to 32-21-4; tps. 29 to 32-22-4; tps. 29 to 32-23-4; tps. 29 to 32-24-4; tps. 29 to 32-25-4; tps. 29 to 32-26-4; tps. 28 to 32-27-4; tps. 21, 22, 28 to 32-28-4; tps. 20 to 23-29-4; tps. 19, 21, 22, 23 and 25 to 32-1-5; tps. 23 to 32-2-5; tps. 21 to 31-3-5; tps. 24 to 31-4-5; tps. 25 and 26-5-5; tp. 26-6-5.

Brenot, L., Ottawa, Ont.—
*Classification of lands in the Peace River district between Smoky river and Lesser Slave lake, for the Soldier Settlement Board.

Bridgland, M.P., Calgary, Alta.—
Photo-topographical survey of the north part of the Bow forest in the Rocky Mountains forest reserve.

Buchanan, J.A., Edmonton, Alta.—
Partial subdivision of tps. 101 to 104-22-5; tps. 101 and 102-23-5; tps. 101 and 102-24-5. Survey of settlement at Carcajou point in tp. 101-19-5.

Cautley, R. W., Edmonton, Alta.—
Survey of interprovincial boundary between Alberta and British Columbia along the 120th meridian in the vicinity of Peace river.

Christie, W., Prince Albert, Sask.—
Stadia surveys of water areas in tps. 46, 47, 48 and 50-26-2; tps. 46 to 48-27-2; tps. 45 and 47-28-2. Examination of lands for Soldier Settlement Board in the Porcupine Forest reserve.

Cote, J. M., Ottawa, Ont.—
Retracement of school lands in tp. 35-3-3; tps. 35 to 38-4-3; tps. 35 to 38-5-3; tps. 35 to 38-6-3; tps. 36 to 38-7-3.

Cowper, G. C., Ottawa, Ont.—
Stadia surveys in tps. 1 and 2-21-3; tps. 1 to 6-22-3; tps. 1 to 8-23-3; tps. 1 to 8-24-3. tps. 1 to 8 and 10-25-3; tps. 1 to 10-26-3; tps. 1 to 10-27-3; tps. 1 to 10-28-3; tps. 1 to 10-29-3; tps. 1 to 10-30-3; tps. 11 and 18 to 22-1-4; tps. 11, 12, 13 and 18 to 21-2-4; tps. 11, 12 and 13 to 18-3-4; tps. 11 to 17-4-4; tps. 11 to 16, 20 and 21-5-4; tps. 11 to 17 and 19 to 21-6-4; tps. 11 to 17 and 19-7-4; tps. 12, 13, 14, 16, 17 and 19-8-4; tps. 13, 14, 15, 17, 18 and 19-9-4; tps. 2 to 17 and 20-10-4; tps. 11 and 12-11-4.

Davies, T. A., Edmonton, Alta.—
Stadia surveys in tps. 45-15 to 22-3; tps. 45 and 46-23-3; tps. 45 to 49-24-3; tps. 45 to 49, anl 51 to 53-25-3; tps. 45 to 53-26-3; tps. 45 to 53-27-3; tps. 45 to 53-28-3; tps. 48 to 51-1-4; tps. 48 to 51-2-4; tps. 48 to 51-3-4.

Dozois, L. O. R., Calgary, Alta.—
Secondary levels along the 11th base line from the Fourth meridian to the Fifth meridian, 167 miles.

Fawcett, S. D., Ottawa, Ont.—
Classification of land in the Peace River district from Smoky river westerly to Pouce Coupe, for the Soldier Settlement Board.

Fontaine, L. E. Lévis, Que.—
Retracement of school lands in tp. 16-15-2; tps. 18 and 19-16-2; tps. 18 and 19-17-2; tps. 17, 18 and 19-18-2; tps. 18 and 19-19-2.

Glover, A. E., Edmonton, Alta.—
Retracement survey in tps. 44 and 45-14-3; tp. 38-19-3; tp. 38-20-3; tp. 49-22-3; tp. 44-28-3; tps. 45, 51, 52 and 53-1-4; tp. 34-10-4; tp. 67-12-4; tp. 40-14-4; tps. 56 and 57-15-4;

tp. 45-1-6. Correction survey in tp. 53-21-3; tp. 34-22-3; tp. 37-22-3; tp. 37-23-3; tp. 53-1-4; tp. 75-9-4; tp. 43-2-5. Resurvey in tp. 88-7-4; tp. 59-14-4. Stadia traverse in tp. 54-13-3; tp. 33-19-3; tp. 63-2-4; tp. 58-10-4; tp. 41-7-5. Inspection of dried up lakes in tp. 59-3-5; tp. 59-12-5. Survey of cemetery in tp. 49-27-5 at Pocahontas and at Jasper in tp. 45-1-6.

Jackson, J. E., Hamilton, Ont.—
Subdivision of tp. 32-6-E., and part of 33-6-E. Resurvey of tp. 1-13-E. and tp. 21-2-Pr. Lot survey in tp. 39-3-E.; tps. 32 and 39-4-E.; tp. 32-5-E.

Johnston, W. J., Vancouver, B.C.—
Subdivision in tp. 20-23-6; tps. 19 and 20-25-6; tp. 23-24-6; tp. 23-25-6; tps. 11 and 19-26-6; tp. 18-28-6; tps. 3 and 4-29-6. Retracement in tps. 19 and 20-25-6; tp. 18-28-6; tp. 4-29-6. Traverse in tp. 20-23-6.

King, J. A. S., Ottawa, Ont.—
Retracement of school lands in tps. 9 to 12 and 14 to 16-22-Pr.; tps. 9, 11, 13, 15 and 16-23-Pr.; tps. 9 to 12 and 15-24-Pr.; tps. 9 and 10-25-Pr.; tps. 9 and 10-26-Pr.; tps. 9, 10 and 11-27-Pr.

Knight, R. H., Edmonton, Alta.—
Resurvey of tp. 23-13-3; tp. 23-14-3; tps. 20 and 21-29-3; tp. 22-11-4. Retracement in tps. 19 and 20-4-3; tp. 33-5-3; tps. 35 and 36-8-3; tp. 17-10-3.

LeBlanc, P. M. H., Ottawa, Ont.—
Stadia surveys in tps. 20 to 23-5-2; tps. 20 to 24-6-2; tps. 19a and 19 to 24-7-2; tps. 19a and 19 to 23-8-2; tps. 19a and 19 to 21-9-2; tps. 19a and 18 to 21-10-2; tps. 19a and 18 to 24-11-2; tps. 19a and 19 to 24-12-2; tps. 19 to 21-13-2; tps. 19, 21 and 32 to 34-14-2; tps. 21 and 32 to 35-15-2; tps. 32 to 35-16-2; tps. 26, 32, 34 and 35-17-2; tps. 32 to 35-18-2; tps. 32 and 33-19-2.

Lonergan, G. J., Buckingham, Que.—
Inspection of survey parties under Dominion Land Surveyors. W. Christie, J. M. Cote, G. C. Cowper, S. D. Fawcett, A. E. Glover, P. M. H. LeBlanc, E. S Martindale, P. J. McGarry, R. B. McKay, W. H. Norrish, C. Rinfret, H. M. R. Soars, N. C. Stewart.

Martindale, E. S., Aylmer, Ont.—
Resurvey in tp. 10-3-2; tp. 26-24-2. Retracement in tp. 25-31-Pr.; tp. 18-33-Pr.; tp. 29-23-2; tps. 8 and 9-17-3; tp. 11-20-3; tp. 21-23-3; tp. 23-27-3. Correction survey in tp. 24-30-Pr.; tp. 5-17-2; tp. 28-23-2; tp. 18-14-3; tp. 18-20-3; tp. 24-23-3; tp. 26-9-4; tp. 26-12-4; tp. 11-27-4; tp. 11-28-4; tp. 30-2-5. Traverse in tp. 26-2-2; tp. 16-5-2; tps. 19 and 20-8-5. Topographical Survey of Waterton Park townsite.

Montgomery, R. H., Prince Albert, Sask.—
Secondary levels along the east boundary of range 13 west of the Second meridian from the international boundary to the 11th base line, 240 miles.

McEwen, D. F., Edmonton, Alta.—
Retracement of school lands in tps. 54 to 56-15-4; tps. 54 to 56-16-4 tps. 52 to 56-17-4; tps. 53 to 56-18-4; tp. 54-24-4.

McGarry, P. J., Merritton, Ont.—
Stadia surveys in tps. 38, 39 and 42 to 46-6-3; tps. 38 to 40, 42, 43 and 45-7-3; tps. 38 to 46-8-3; tps. 38 to 45-9-3; tps. 38 to 44-10-3; tps. 39 to 43-11-3; tps. 39 to 43-12-3; tps. 40 to 42-13-3; tps. 41 to 43-14-3.

McKay, R. B., Vancouver, B.C.—
Correction survey in tps. 38 and 39-18-2; tp. 38-24-2; tp. 39-2-3; tps. 38 and 39-4-3. Retracement in tp. 40-24-2; tp. 45-2-3; tp. 34-5-3; tp. 35-13-3; and tp. 35-15-3. Stadia surveys in tp. 49-14-2; tp. 44-1-3. Investigation of school lands in tp. 41-25-2; and tp. 44-26-2.

Narraway, A. M., Ottawa, Ont.—
Inspection of survey parties under Dominion Land Surveyors, W. J. Boulton, L. Brenot, J. A. Buchanan, L. E. Fontaine, J. E. Jackson, J. A. S. King, R. H. Knight, D. F. McEwen, J. W. Pierce, C. H. Taggart, J. Vicars, and C. M. Walker.

Norrish, W. H., Ottawa, Ont.—
Stadia surveys in tps. 37 and 39-20-4; tps. 34 to 36, 39 and 40-21-4; tps. 39 to 41-22-4; tp. 39-23-4; tp. 38-25-4; tp. 39-26-4; tps. 38 and 39-27-4; tp. 37-28-4. Resurvey of school lands in tp. 37-21-4; tps. 33 and 34-22-4; tp. 38-23-4; tp. 38-24-4; tp. 38-26-4; tps. 33, 35, 36, 38 and 39-28-4.

Pierce, J. W., Pembroke, Ont.—
Stadia surveys of water areas in tps. 21 and 22-1-E.; tps. 17 to 22-1-Pr.; tps. 17 to 22-2-Pr.; tps. 17 to 22-3-Pr.; tps. 17 to 22-4-Pr.; tps. 18 to 22-5-Pr. Investigation for the Soldier Settlement Board in tps. 20 and 21-16-Pr.; tp. 22-17-Pr.; tps. 19, 20, 22 and 23-18-Pr.; tps. 18 to 20-19-Pr.; tps. 18 to 20-20-Pr.; tp. 23-23-Pr.; tp. 25-24-Pr.; tp. 25-25-Pr.; tps. 23 to 25-26-Pr.

Purser, R. C., Ottawa, Ont.—
Retracement survey in tp. 17-7-E.; tp. 18-10-E.; tp. 23-1-Pr.; tp. 4-7-Pr.; tp. 4-8-Pr.; tp. 56-26-Pr.; tp. 14-7-2. Correction survey in tp. 16-7-E.; tps. 24 and 25-4-Pr.; tp. 25-5-Pr.; tp. 21-6-Pr.; Traverse in tp. 24-5-Pr.; tp. 23-8-Pr. Resurvey of school lands in tp. 11-6-2; tp. 14-8-2.

Rinfret, C., St. Stanislas, Que.—
Stadia surveys in tp. 6-3-2; tps. 7 and 8-5-2; tps. 7 and 8-6-2; tps. 7 and 8-7-2; tps. 7 and 8-8-2; tps. 7 and 8-9-2; tps. 7 to 10-10-2; tps. 9 and 10-12-2; tps. 7 to 10-13-2; tps. 7 to 10-14-2; tps. 7 to 10-15-2; tps. 7 to 10-16-2; tps. 7 to 10-17-2; tps. 4 and 7 to 10-18-2; tps. 1 and 2-19-2; tp. 1-20-2; tp. 1-21-2; tp. 1-22-2; tps. 1 and 10-23-2; tps. 1 to 49 and 10-24-2; tps. 1 to 3 and 9-25-2; tps. 1, 2, 9 and 10-26-2; tps. 1 to 4-27-2; tps. 1 to 4 and 12 to 15-28-2; tps. 1, 2, 5 and 12 to 16-29-2; tps. 1, 2, 12 and 14-29-2; tps. 15 and 16-30-2; tps. 12 to 16-1-3; tps. 13 and 14-2-3.

Soars, H. M. R., Edmonton, Alta.—
Stadia surveys in tp. 55-10-4; tps. 52 to 55-11-4; tps. 52 to 54-12-4; tps. 52 to 55 and 57-13-4; tps. 52 to 54 and 56 to 58-14-4; tps. 52 and 53-15-4; tps. 52 to 54-16-4; tp. 49-23-4; tps. 45 to 53-24-4; tps. 46 to 50 and 52-25-4; tp. 46-26-4.

Stewart, N.C., Vancouver, B.C.—
Subdivision in tps. 26 and 27-22-5; tps. 20, 21 and 28-1-6; tp. 27-2-6; tp. 23-6-6; tp. 22-7-6. Retracement in tp. 23-18-5; tp. 20-1-6. Traverse in tps. 26 and 27-22-5; tps. 20 and 21-1-6.

Taggart, C. H., Kamloops, B.C.—
Retracement of school lands in tp. 13-1-E.; tp. 8-2-E.; tps. 7 to 13-3-E.; tps. 7 to 13-4-E.; tps. 7 to 13-5-E.; tps. 7 and 12-1-Pr.; tp. 12-2-Pr.; tp. 12-3-Pr.

Vicars, John, Kamloops, B.C.—
Subdivision in tps. 20 and 21-13-6; tps. 16 and 17-16-6; tp. 18-17-6; tps. 17, 19 and 20-19-6; tps. 17, 20 and 23-20-6; tps. 22 and 23-21-6. Retracement in tps. 20 and 21-13-6; tps. 17 and 20-19-6. Traverse in tps. 16 and 17-16-6; tp. 20-19-6; tp. 17-20-6.

Walker, C. M., Ottawa, Ont.—
Retracement of school lands in tps. 18 to 21-25-4; tps. 17 to 21-26-4; tps. 17 to 20-27-4; tps. 17 to 20-28-4; tps. 17 to 19 and 21-29-4; tps. 18, 21, 23 and 25 to 29-1-5; tps. 22, 25, 26, 28 and 29-2-5; tps. 24 to 29-3-5. Reposting lots in Banff cemetery.

APPENDIX No. 3.

SCHEDULE showing for each surveyor employed the number of miles surveyed of section lines, township outlines, traverses of lakes and rivers, and resurvey; also the cost of the same. Surveyors whose work cannot be reckoned in miles are omitted from the statement.

	Miles of Section.	Miles of Outline.	Miles of Traverse.	Miles of Resurvey	Total Mileage.	Total Cost.	Cost per Mile.
						$	$ cts.
Akins, J. R.				354	354	14,342	40 51
Bennett, G. A.			772	16	788	8,347	10 59
Blanchet, G. H.			1,400	127	1,527	18,058	11 82
Boulton, W. J.			1,125		1,125	8,318	7 39
Buchanan, J. A.	235	45	19		299	13,778	46 08
*Christie, W.			481		481	9,043	18 80
Cote, J. M.				136	136	6,244	45 91
Cowper, G. C.			573	20	593	7,589	12 80
Davies, T. A.			626		626	7,185	11 48
Fontaine, L. E.				62	62	6,107	98 50
Jackson, J. E.	38		44	185	267	10,551	39 52
King, J. A. S.			5	216	221	5,901	26 70
Knight, R. H.				456	456	12,125	26 59
LeBlanc, P. M. H.			701	2	703	7,826	11 13
McEwen, D. F.				143	143	4,294	30 03
McGarry, P. J.			582		582	8,796	15 11
Norrish, W. H.			671	126	797	9,112	11 43
*Pierce, J. W.			413	89	502	10,111	20 14
Rinfret, C.			716	96	812	9,209	11 34
Soars, H. M. R.			390	117	507	6,629	13 07
Taggart, C. H.				151	151	5,006	33 15
Walker, C. M.				313	313	5,936	18 96
	273	45	8,518	2,609	11,445	194,507	16 99

* Spent part of season examining lands for Soldier Settlement Board. Total cost includes depreciation of outfit.

APPENDIX No. 4.

DETAILS OF OFFICE WORK.

Sketches, maps, and tracings made	5,197
Descriptions of irregular parcels of land	11
Returns of survey examined—	
Township subdivision	18
Township outline	52
Stadia plots	831
Townships investigated for water areas	660
Road plans	479
Railway plans	48
Mineral claims	64
Correction and other miscellaneous surveys	199
Preliminary township plans	59
Township and miscellaneous plans compiled	789
" " issued	759
Sectional maps issued (three miles to one inch—	
Revised maps	24
Photographic work—	
Dry plates and films	1,039
Prints	10,945
Prints mounted	3,685
Wet plate negatives	2,068
Photo litho plates	527
Lantern slides	60

APPENDIX No. 5.

SURVEYING INSTRUMENTS ON HAND MARCH 31, 1919

Instruments.	In stock April 1, 1918.	Purchased.	Balance.			Remnrks.
			Sold.	Loan.	Store.	
Abney levels	27	2	11	1	18 1	received from Yukon office.
Alidades	1				1	
Altazimuths	1				1	
Aneroids	91			3	88	
Artificial horizons	4				4	
Base line apparntus	1				1	

Instruments.	In stock April 1, 1918.	Purchased	Balance.			Remarks.
			Sold.	Loan.	Store.	
Cameras and kodaks	18			6	12	
Chronometers and sidereal watches	55	2	4		53	
Compasses	34	8	1		38	3 lost on survey.
Current meters and logs	3				3	
Dip circles	2				2	
Field glasses and binoculars	6				6	
Levels	52			5	46	1 worn out on survey.
Levelling rods	103			13	90	
Micrometer telescopes	8				8	
Optical squares	1				1	
Pedometers	2	15			16	1 lost on survey.
Photo-theodolites	5				5	
Plane tables	1				1	
Protractors	72			14	57	1 lost on survey.
Rod levels	20	12		3	28	"
Sextaats and reflecting circles	3				3	
Solar compnsses	2				2	
Stadia rods	27	3	4	26		
Stadia slide rules	60			8	52	
Steel tapes	160	14	14	6	154	
Subsidiary standard measures	71		3		68	
Survey pickets	2				2	
Surveying cameras	4				4	
Tally registers	12	6			17	1 lost on survey.
Tape stretching apparatus	1				1	
Telemeters	1			1		
Thermometers	16	30	2	3	40	1 used for precise levelling rod.
Transit theodolites	62	10	5	3	63	1 wora out on survey.
Zenith telescopes	1				1	

INDEX TO TOWNSHIPS IN MANITOBA, SASKATCHEWAN, ALBERTA, AND BRITISH COLUMBIA

To Illustrate Progress of Dominion Lands Surveys

Annual report of the Topographical Surveys Branch, Department of the Interior, 1918-1919

Scale, 35 miles to an inch

Subdivision surveys made prior to March 31 1918
Subdivision surveys made from April 1 1918 to March 31 1919
Resurveys made from April 1 1918 to March 31 1919

CAUTION This is only an index, topographical and other features are not to be depended upon.

Surveys in the Railway Belt in British Columbia are not shown owing to their scattered nature.
Lines of spirit levels run prior to March 31, 1919
Base and meridian lines in subdivided lands run prior to March 31, 1919
Townships wholly or partly levelled are not shown

SUMMARY REPORT

OF THE

GEOLOGICAL SURVEY

DEPARTMENT OF MINES

FOR THE CALENDAR YEAR

1919

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1921

[No. 26—1920.] [No. 1862'

To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.B.O., etc., etc., Governor General and Commander in Chief of the Dominion of Canada.

May it Please Your Excellency,—

The undersigned has the honour to lay before Your Excellency, in compliance with 6-7 Edward VII, chapter 29, section 18, the Summary Report of the work of the Geological Survey, Department of Mines, for the calendar year ending December 31, 1919.

ARTHUR MEIGHEN,
Minister of Mines.

To the Hon. ARTHUR MEIGHEN,
Minister of Mines,
Ottawa.

SIR,—I have the honour to submit herewith the Director's Summary Report of the work of the Geological Survey, Department of Mines, for the calendar year ending December 31, 1919.

I am, sir, your obedient servant,

R. G. McCONNELL,
Deputy Minister.

SUMMARY REPORT, 1919, PART A

REPORT OF THE DIRECTOR

By William McInnes

INTRODUCTION

The work of the Geological Survey, during the field season of 1919, was spread, as in previous years, over the whole of Canada. The field over which exploratory and detailed work in geology and natural science might be extended with advantage to the Dominion is so wide that it is possible in one year to cover only a very small part. Consequently areas of work were chosen which in the judgment of the department most urgently needed examination.

In accordance with this choice, exploratory parties operated in Yukon, British Columbia, the area of the Great Plains, the Northwest Territories, Manitoba, Ontario, Quebec, and the Maritime Provinces.

The British Columbia office at Vancouver, in charge of C. Camsell, continued to meet the great demands made upon its staff, and worked in close co-operation with the Provincial Department of Mines (Part B, page 1).

For convenience of reference and economy in printing, the summary was again issued in parts covering geographical areas. The parts were published from time to time throughout the year as they were got ready. The following parts, which with Part A make up the summary report for the year, have been distributed:

Part B. Yukon and British Columbia.

Part C. The Great Plains area and north to the Northwest Territories.

Part D. Northern Manitoba.

Part E. Ontario and Quebec.

Part F. The Maritime Provinces.

Part G. Northern Ontario.

GEOLOGICAL FIELD WORK

W. E. Cockfield, in Yukon, explored geologically part of the Ogilvie range which extends from the Mackenzie mountains at the headwaters of Stewart river to the Yukon at the crossing of the 141st meridian. No deposits of present economic value are known within the area actually mapped, but the geological conditions are similar to those in the valley of Twelvemile river, where galena deposits occur, so that the district offers some inducement to prospectors. Prospecting, however, should be confined to those areas in the vicinity of igneous rocks.

A few days were spent by Mr. Cockfield in examining properties in the Mayo area, where high-grade silver ore has been opened up on Keno hill. Mr. Cockfield regards this deposit as of great importance and believes the field offers great promise to the mining man. (Part B, page 1.)

J. J. O'Neill spent the summer of 1919 in the Salmon River district, Portland Canal Mining Division, British Columbia, which has, during the past few years, attracted attention because of the discovery of silver ores, both high and low grade. Mr. O'Neill's work was almost exclusively confined to the high-grade ores, which are

found in quartz veins or silicified shear zones about the borders of the granodiorite porphyry intrusive. In Mr. O'Neill's opinion properties carrying these ores should be very carefully tested to determine the extent and general average of the ore before any heavy expense is undertaken in the purchase of mining machinery, or in the way of transportation improvements. Most of the values of the low-grade ores are in zinc, and it will be necessary to develop mining and metallurgical processes to treat this material before it can be utilized. (Part B, page 7.)

V. Dolmage, in continuation of a plan inaugurated in 1918, to make a geological and mineralogical survey of the west coast of Vancouver island, spent six weeks of the season of 1919 in mapping the shore and islands of Barkley sound. No minerals, except small quantities of alluvial gold, have been produced from this district since 1902, although copper has been spasmodically mined and shipped. Iron, also, has been mined in the form of a very pure magnetite, and may possibly be mined again if an iron and steel industry be established on the British Columbia coast. A mercury deposit near the Sechart whaling station, and, therefore, within easy reach of transportation, was examined by Mr. Dolmage, who is of the opinion that thorough prospecting for a commercial deposit of mercury in the vicinity of the whaling station is well justified.

Mr. Dolmage also visited the Sunloch copper deposit, situated on Jordan river, Vancouver island, discovered a few years ago, and now worked by the Consolidated Mining and Smelting Company. The deposits occur in a series of basic lava flows and tuffs which have been compressed into large folds and have been intruded by a number of stocks and dykes of gabbro. The managing director of the company estimated, at the end of 1918, that 100,000 to 150,000 tons of ore, averaging 3 per cent to 5 per cent copper, had been proved. Since that time the tonnage has been considerably increased. Mr. Dolmage believes the ore will continue to a great depth below the present workings. (Part B, page 12.)

C. Camsell, owing to the pressure of duties connected with the British Columbia office, was able to spend only a short time in the field. He visited the Coquihalla district, British Columbia, which extends from the town of Hope, on Fraser river, up the valley of Coquihalla river as far as Boston Bar creek, and includes a belt from 4 to 10 miles deep on either side of the river. Physical difficulties have, until quite recently, withheld prospectors from this area, but the opportunities now provided by the Kettle Valley railway appear likely to encourage mining activity. High-grade lode gold deposits have been developed in the area, but the similarity of its geological formations to those of the adjacent Siwash Creek district is alone sufficient to recommend it to the prospector.

Mr. Camsell examined, also, the silver deposits at Stump lake, Yale district, which were worked in the "eighties" but were afterwards practically abandoned. The veins are believed to have been formed by ascending thermal waters, and carry values mainly in silver, with lesser amounts of gold. Active development work was carried on during the summer of 1918 and sorted ore, yielding about $50 to the ton, was shipped during 1919. (Part B, page 30.)

B. R. MacKay spent two months of the field season, 1919, in studying placer deposits in the Horsefly River area, in examining an oil-shale prospect on Antoine creek, and in visiting the neighbouring deposits at Twentymile creek, Bullion, and Keithley creek, all in the Cariboo district. Mr. MacKay reports that capital—both English and American—is seeking investments in favourable-looking placer deposits and that a marked renewal of interest has been evinced in the gold quartz properties. He says that a most optimistic attitude is shared by every operator in the district. The great drawback to successful mining in this district is still, as it has always been, the lack of railway transportation, but the completion of the Pacific Great Eastern

railway to Quesnel, though the route does not pass through the mineral belt of Cariboo, will materially help to lower the cost of production. Mr. MacKay spent a month in the Barkerville district examining various placer deposits, and in visiting the quartz ledges on Proserpine mountain. (Part B, page 36.)

S. J. Schofield furnished a short report on the discovery of fossils in the Mesozoic rocks on Nickel Plate mountain, near Hedley, on Similkameen river. These rocks were classed by Dawson, in 1877, as belonging to the Cache Creek group of Carboniferous age, but the echinoderm fragments discovered in the autumn of 1919 place the Nickel Plate formation in the same general horizon as the Nicola, Cultus, Marble Bay, and Sutton formations. (Part B, page 38.)

M. F. Bancroft devoted the field season of 1919 to a study of the general geology and structure of a portion of the Selkirk Mountain region, embraced in Slocan mining area, Kootenay district, British Columbia (Map 1667 [1916]). The area covers about 260 square miles in the Slocan and Ainsworth mining divisions. The mineralized areas between Kootenay and Slocan lakes form the basis of a considerable mining industry, yielding high-grade silver, lead, and zinc ores. The Slocan area has been responsible for a large proportion of the silver production of the province. Much information bearing on the geology and ore deposits of the Slocan is contained in the earlier reports of the Survey. (Part B, page 39.)

W. A. Johnston investigated the lower part of Fraser river and its delta, largely for the purpose of assisting the Department of Public Works to improve the navigable channels. A preliminary report was made to the Board of Engineers of the Department of Public Works in February, 1920, and a full report is in preparation. The board has under consideration the problem of navigation improvement of the Fraser.

L. Reinecke completed his examination of the area served by the Pacific Great Eastern railway between Lillooet and Prince George. His report, since published as Memoir 118, deals fully with the known deposits of the minerals in the vicinity of the railway, especially hydromagnesite, epsomite, chromite, and molybdenite.

W. S. McCann explored the Bridge River area of Lillooet Mining Division, B.C. He visited most of the gold claims, the principal of which are on Cadwallader creek, the silver-copper claims on McGillivray mount, and the antimony veins on that mount, and on Gunn and Taylor creeks. The mining industry of the area suffered greatly during the war period, but a revival of interest is anticipated, particularly in the gold quartz deposits.

E. M. Kindle continued the field work begun in the Mackenzie River basin in 1917 on the correlation and stratigraphy of the formations of that region. Particular attention was given to the stratigraphy of that portion of the Mackenzie valley in which oil has since been struck. Field work was extended to the northern limit of Devonian rocks near the Mackenzie. Great Bear river was ascended about 45 miles to a point above mount Charles. Silurian fossils were obtained from the Mount Charles section and from the Cap Mountain section east of Wrigley. Shorter trips were also made up the North Nahanni, Root, and Liard rivers. The collections secured represent, with those made in 1917, all the horizons of the Devonian of this region. A short report on a new iron ore horizon east of Wrigley was prepared. (Part C, page 1.))

J. S. Stewart was attached to a geological party sent out by the Provincial Government of British Columbia to investigate the oil and gas possibilities of the northeastern part of that province. No seepages of oil or gas were observed within the area examined, but at least two, and perhaps three, anticlinal folds have been traced, and though they are for the most part eroded well down into the lower part of the St. John shales, yet there is a possibility that porous absorbent sandy lenses occur in

places. Mr. Stewart thinks that any projected borings should penetrate at least the entire thickness of the Bullhead Mountain formation, a sandstone of freshwater deposition which appears to outcrop for the most part in the west of the area examined. This area may be roughly described as lying south and southeast of Hudson Hope, on Peace river. (Part C, page 3.)

J. MacVicar carried on exploration work in the coal areas northwest of Brûlé lake, an expansion of Athabaska river, Alberta. The coal measures have not, so far as known, been mapped, but they are found to occur mostly in the Kootenay formation, of which the upper part only is exposed in this area. The seams vary in thickness up to 5½ feet and the coal is bituminous, bright and clear, but friable.

Mr. MacVicar's explorations were a continuation of those made by him in 1916 a few miles to the west, where very thick seams—up to 100 feet thick—were found in probably lower beds of the same formation. (Part C, page 8.)

F. H. McLearn spent the field season in a reconnaissance examination of a part of Little Smoky river, a tributary of Smoky river, Peace river, Alberta. Owing to the scarcity of outcrops the results of the expedition make no important addition to our knowledge of the structural geology of the region. (Part C, page 13.)

B. Rose continued his examination of the coal areas of the Rocky mountains, and carried his investigations northward to cover the area drained by Highwood river. No coal has been worked in this area, and the measures have been prospected at only one locality, locally known as the Ford mine on Cat creek. Coal of economic importance is found in the Kootenay formation only. The coal is highly bituminous and most of the seams appear to be clean. The thickness of the seams ranges from 4 to 22 feet. (Part C, page 14.)

D. B. Dowling was employed during the field season of 1919 mainly in keeping in touch with the prospecting for gas and oil which was being carried on. He visited several of the drilling sites and the gasolene absorption plant south of Calgary. In his summary report he draws attention to the possibilities of oil production from the Devonian rocks that are buried beneath the Cretaceous of the eastern part of the plains. (Part C, page 20.)

E. L. Bruce made an examination of the belt of Precambrian rocks in which lie the headwaters of Hayes river, in northeastern Manitoba. Early geological exploration proved the existence of rocks in this region similar to those associated with the gold and copper ores north of the Saskatchewan, and a few prospectors for gold were attracted to the Knee Lake district, which lies about 125 miles northeast of lake Winnipeg. A few claims have been staked and some development work has been done, but the veins have proved disappointing. Those quartz veins found to be auriferous occur in fractured quartz-porphyry dykes. (Part D, page 1.)

F. J. Alcock collected data for the areal mapping of a rectangle including Pipestone lake and a part of Cross lake, northern Manitoba. The area was known to contain rocks similar to those found in the mineralized belt north of The Pas. The district, however, is not promising from a mining viewpoint, owing to the limited extent of rocks of the Pre-Granite Complex. A few gold claims have been staked on the north shore of Pipestone lake and on an island near where Nelson river empties into Pipestone lake. Assays of grab samples were not sufficiently promising to justify any large expenditure. (Part D, page 11.)

T. L. Tanton spent the season of 1919 in preparing an areal map of a well-known mineralized district on the north shore of lake Superior. Rocks of equivalent age to those which carry the celebrated iron and copper deposits of the south shore of lake Superior are represented in this section, but no concentrations of iron or copper of economic interest have been found. The fracture fillings in these Animikie and Keweenawan rocks, however, have been found to carry rich silver ores, as, for instance, at Silver islet. It is expected that the geological work will facilitate the tracing of

faults and the systematic prospecting of these may bring to light further deposits of value. (Part E, page 1.)

M. Y. Williams in addition to making a study of those oil-fields and prospects in southwestern Ontario not covered in previous work, examined an oil occurrence in a syncline in the Trenton formation of Dover West township, Kent county. This occurrence is specially interesting both because it is the only commercial production from the Trenton in Canada, and because the oil is known to occur in a syncline. The limit of the syncline and the oil pool has not yet been determined. (Part E, page 7.)

As the need for petroleum in Canada becomes more and more urgent, attention is being directed to the less known sedimentary basins as possible sources of supply. This department, co-operating with the Department of Mines, Ontario, undertook during the summer of 1919 the exploration of parts of the valleys of Mattagami, Abitibi, and Moose rivers. Mr. Williams was instructed to examine and make a report on these areas, and his views have been summarized in a short report, included in Part G, Summary Report, 1919. (Part G, page 1.)

H. C. Cooke explored the district west of Kirkland lake, but, from an economic standpoint the geological work proved disappointing. He made a hurried examination of the reported find of platinum in Otto township. Mr. Cooke believes the locality to be a good field for prospecting in the hope of obtaining a large-sized body of high-grade ore, but says that the ore-bodies hitherto found are too low grade and too small in size to be of any value for mining purposes. (Part E, page 18.)

M. E. Wilson spent the greater part of the field season of 1919 in completing the investigations in the Renfrew-Calabogie district commenced in 1918. This work included the completion of the geological examination of the Renfrew and Calabogie map-areas and the examination of the principal mineral deposits that occur within the Renfrew and Calabogie map-areas or in the territory adjacent to these areas. The mineral deposits that occur in this region are both numerous and varied and are in some cases extensive. The minerals of commercial importance represented in the deposits include graphite, pyrite, molybdenite, magnetite, hematite, and celestite. (Part E, page 19.)

A. Anrep carried on his investigations of peat bogs in Ontario and Quebec, examining areas containing over 20,000,000 tons of peat, the larger part of which is workable for fuel or other purposes. (Part E, page 44.)

W. H. Collins continued in 1919 a study of the iron formations of Michipicoten district, Ontario, which was begun in 1918. The hematite, siderite, and pyrite deposits constitute the chief mineral wealth of the district, and are integral parts of the iron formations; consequently, additional knowledge regarding the nature and distribution of the formations should facilitate the search and development of the iron ores and sulphur deposits that accompany them.

Study of the iron formations involved a systematic geological exploration of the whole district. Much time was also given to surveying canoe routes, for a surprisingly large part of the country is unknown except to a few trappers and resident prospectors. Sufficient geological and geographical data were collected to make, on a scale of one mile to an inch, a map of 500 square miles of country, suitable for prospecting and other exploratory needs.

Some of the gold-bearing properties discovered east of Goudreau during 1918 and 1919 were visited for the purpose of forming an opinion regarding their chances of successful development.

R. Harvie spent the season continuing his studies of the geology of the Thetford area, Quebec, within which occur the famous asbestos deposits, now producing 85 per cent of the world's supply, with a value, this year, of almost $11,000,000.

W. J. Wright spent most of the field season in the geological survey of the Moncton map-area and an examination of the oil-shale deposits of Albert county, N.B. His report on these oil-shales is being prepared for press. (Part F, page 1.)

E. R. Faribault was occupied during the field season of 1919 in geological investigations in Shelburne, Queens, and Yarmouth counties, Nova Scotia. The structural geology of Sable River and Lockeport map-areas was completed and detailed surveys were made of the Kemptville, Carleton, and Cranberry Head gold districts in Yarmouth county. A map on a scale of 2 miles to 1 inch was made of the Kemptville-Carleton area and large scale plans of the two gold districts.

The section of the Gold-bearing series exposed on the shore between Cranberry Head and Chegoggin point was examined and the Halifax slate formation outcropping there was found to be overlain conformably by a band of garnetiferous mica schist 36 feet in thickness, which may have value as a source of abrasive material; a 20-foot layer if iron pyrites, probably of too low a grade to be of value; and 350 feet of white quartzite which is of interest as a possible source of silica. (Part F, page 2.)

A. O. Hayes passed most of the summer in studying certain salt and coal deposits in Nova Scotia. A geological map of Malagash peninsula and a detailed topographical-geological map of the area known to be underlain by salt, together with Mr. Hayes' full report on the Malagash salt area, have since been published (Memoir 121). (Part F, page 20.)

J. Keele (Mines Branch) made a special examination of the Mesozoic clays in northern Ontario, particularly those in the valleys of the Missinaibi and Mattagami rivers. A synopsis of his views has been published as a separate report included in Part G, Summary Report, 1919. (Part G, page 13.)

DIVISION OF PALÆONTOLOGY

E. M. Kindle, Chief of the Division, spent the field season of 1919 in the Mackenzie district (page 3A). He reports that L. D. Burling continued work upon the Cambrian and Precambrian rocks of the Cordilleran region; that E. J. Whittaker collected fossils from the Devonian of the Liard valley; that Miss A. E. Wilson continued her studies of Ordovician sections in the Ottawa valley; that F. H. McLearn was occupied with field work in western Alberta (Part C, page 13); and that C. M. Sternberg, assisted by J. Skillen, spent the field season in the Red Deer River district, Alberta, collecting specimens of parts of dinosaurs and hadrosaurs. It has been the policy of the division to keep the viewpoint of modern ecology in studying fossils and to endeavour to interpret their stratigraphic significance in the light of the rapidly growing body of knowledge regarding sedimentation.

The Division of Vertebrate Palæontology and the department suffered an almost irreparable loss early in the year by the death of the chief of the division, Lawrence M. Lambe, which occurred on March 12, 1919. Mr. Lambe had been associated with the Geological Survey since 1885 and for the past fifteen years had devoted himself almost exclusively to vertebrate palæontology, on which subject he had published many authoritative memoirs. Pending the appointment of a successor, C. M. Sternberg has continued the work of the division under the supervision of Dr. Kindle.

DIVISION OF MINERALOGY

R. A. A. Johnston, Chief of the Division, reports that during 1919 great improvement has been made in the organization of the laboratories. M. F. Connor paid particular attention to the constitution of chrome ores from the Black Lake area, Quebec. This work will, it is hoped, lead to a better understanding and a more satisfactory exploitation of the ores of the area. E. Poitevin visited the Black Lake and Thetford asbestos deposits, and with H. V. Ellsworth made an extensive study of some remarkably fine inyoite specimens from the gypsum deposits of New Brunswick (Museum Bulletin 32). Over 500 specimens have been received for identification or comment as to their economic value.

Thanks of the department are due to the following gentlemen for donations to the Museum: Mr. P. Doucet, Manager, Amalgamated Asbestos Corporation, Ltd., Montreal; Mr. B. R. Freeland, Grand Forks, B.C.; Mr. N. H. Griffin, General Manager of the Rhodesian Asbestos Mines, Buluwayo, Rhodesia; Prof. A. Lacroix, Paris, France; Mr. R. E. Lenthall, Newport Island, Gaspe, Que.; Monsieur Albert Pelloux, Genoa, Italy; Mr. H. H. Rowatt, Controller of Mining Lands and Secretary of Yukon Branch, Interior Department, Ottawa; Mr. Shimmatsu Ichikawa of Kitashinjo-Mura, Imatate-gun, Fukui-ken, Japan; and to the following for advice and assistance in securing specimens for museum and educational purposes: Charles Brant, M.E., General Manager, the Eldorado Mining and Milling Company, Eldorado, Ont.; the George Gillespie Mining and Milling Company, Madoc, Ont.; the Anglo-American Mining and Milling Company, Madoc, Ont.; Stephen Wellington, Thomas Blue, Councillor Donald McKinnon, Thomas Henderson, L. Ashley, W.G. Douglas, Madoc, Ont.; Harry Smeaton and W. Nicholson, Queensborough, Ont.

Mr. Johnston, with W. D. Dalglish as assistant, visited Lyons, France, to take charge of the Canadian exhibit at the Lyons Fair, which was held in March. Sir George Foster, who paid an official visit to the Canadian section, expressed entire satisfaction with all the arrangements and intimated that he had decided to have the exhibits placed on view in Paris if suitable arrangements could be effected. The attendance at the Canadian section averaged over 14,000 daily, and was 30,000 on the closing day.

BORINGS DIVISION

E. D. Ingall, Chief of the Borings Division, reports that during the year the work continued along the lines hitherto followed. The work of collecting records of borings and sets of samples from the strata passed through was greatly facilitated in certain districts by the co-operation of the field geologists of the Geological Survey. Studies were made, microscopically and otherwise, of sets of samples from a number of wells in different parts of Canada. The results obtained and the correlations arrived at were communicated to the drillers for their use in the prosecution of their operations. Similar aid was rendered in a number of cases through a search of the published geological literature for data relating to districts where borings are in contemplation or in progress, in search for water, natural gas, or petroleum. In various other ways service was rendered to these interests throughout Canada.

—	No. of sample bags sent out	No. of samples received	No. of wells from which samples were received	No. of records received	No. of circulars sent out
Maritime provinces	2,900	2,232	11	9	
Quebec	150	61	2	17	475
Ontario	4,815	2,405	23	47	
Northwest provinces	800	211	3	1,560	
British Columbia	425	62	1	5	
Total	9,090	4,974	40	1,638	475

BIOLOGICAL DIVISION

R. M. Anderson, Acting Chief of the Division, reports that, although public exhibitions have been suspended during the occupation of the Victoria Museum by Parliament, many specimens have been examined by specialists, and educational exhibits have been arranged. John Macoun continued during the year his botanical work on Vancouver island. James M. Macoun spent much time in the determination

of specimens received from collectors in all parts of Canada, and, assisted by W. Spreadborough, worked in Jasper park, Alberta, and along the Grand Trunk railway to Vanderhoof, B.C. Mr. Macoun's health was very poor when he returned from the field in October, and he was obliged to undergo a serious surgical operation, and to the great loss of the department, he died shortly afterwards.

P. A. Taverner, zoologist (in charge of birds), accompanied by C. E. Johnson of this division, made a representative collection of the summer and breeding birds of Kapuskasing district, Ontario. The results are of considerable value.

C. L. Patch collected biological specimens and gathered information concerning the fauna of the northeastern part of Queen Charlotte islands. D. Blakeney collected birds and mammals in the vicinity of lac Seul, Kenora district, Ont.

J. Skillen, who accompanied the Chas. Sternberg palæontological party in 1919, brought back a small but most interesting collection of birds and mammals from Red Deer river, Alberta.

Dr. Anderson's time was largely occupied as general editor of Arctic reports for the Arctic Biological Committee.

The thanks of the division are due to many donors for notable additions to our collection, but especially to Mr. Ernest Thompson Seton, for a large number of specimens, many of them important from an historical viewpoint.

ANTHROPOLOGICAL DIVISION

E. Sapir, Chief of the Anthropological Division, reports that until the Victoria Museum, now occupied by Parliament, is restored to the Geological Survey, the Anthropological Division is greatly handicapped by lack of space; that C. M. Barbeau made a trip to Lorette, Que., to secure information relating to the Huron Indians; that F. W. Waugh made inquiries into the ethnology of the Ojibwa of lac Seul, Kenora district, Ont.; and that Harlan I. Smith initiated work near Massett, Queen Charlotte islands, which is expected to throw light on the history of the West Coast culture. Dr. Sapir himself spent the greater part of the year in linguistic researches.

Physical Anthropology

The division lost the services of F. H. S. Knowles, who resigned. A successor has not yet been appointed.

PHOTOGRAPHIC DIVISION

G. G. Clarke, Chief Photographer, reports that the following work was done by the Photographic Division during the calendar year 1919:

Contact prints	3¼ x 4¼ to 36 x 48	14,126
Bromide enlargements	4 x 5 " 40 x 72	658
Exposures developed	3¼ x 4¼ " 6½ x 8½	3,636
Dry plate negatives	4 x 5 " 11 x 14	361
Wet plate negatives	8 x 10 " 24 x 30	202
Photostat copies	7 x 11 " 11 x 14	147
Photo zinc plates	11 x 14 " 26 x 32	41
Proofs from zinc's	11 x 14 " 26 x 32	92
Lantern slides	3¼ x 4	462
Photos and titles mounted		1,817

LIBRARY

Mrs. F. E. Forsey, Acting Librarian, was in charge of the library during the year; she reports that the additions to the library during the year 1919, were as follows: books purchased, 447; volumes received by gift, 488; periodicals subscribed for, 4; periodicals re-subscribed for, 145; pamphlets received, 151; maps received, 83; volumes bound during the year, 498.

A notable addition was made to the library during the year in the purchase of the valuable scientific library of the late Dr. Watt, of Montreal.

The map collection was further enriched by fifty charts of Canadian waters purchased from the British Admiralty, seventy-eight charts presented to the library by the Hydrographic Survey of Canada, and one hundred and sixteen lake charts received from the Northern and Northwestern Lakes Survey of the United States War Department.

DISTRIBUTION OF PUBLICATIONS, 1919

During the year 1919, 69,543 publications of the Geological Survey, exclusive of the French editions, were distributed. Of these, 41,640 were distributed in compliance with written and personal requests, and 27,903 were sent to addresses on the mailing lists.

In the case of French translations of Geological Survey publications, the Publishing and Translating Division, Department of Mines, reports that during 1919 7,242 copies were distributed. Of these, 5,693 were distributed in compliance with written and personal requests, and 1,549 were sent to addresses on the mailing lists.

MUSEUM

The Victoria Memorial Museum building continued to house the Parliament of Canada, so that the exhibits remained in storage, excepting the collection of minerals which was open to the public at 227 Sparks street.

The preparation of exhibition groups was continued by the Museum staff in preparation for the re-occupation of the Museum building.

The practice of providing illustrated lectures to the public on topics of general interest was continued throughout the year, though such lectures had to be given elsewhere than in the Victoria Museum. Altogether twenty-three lectures were given on seventeen different subjects by eight lecturers.

TOPOGRAPHICAL DIVISION

W. H. Boyd, Chief Topographer, reports as follows on the work of the year, 1919:

The following topographers, who have been serving with the Canadian Expeditionary Forces, have returned and resumed their work with the division: S. C. McLean, A. G. Haultain, J. R. Cox, and E. E. Freeland.

Mapping

Locality	Topographer-in-charge
Head of Salmon river, Portland canal, B.C.	F. S. Falconer.
Britannia Beach area, B.C.	K. G. Chipman.
North Thompson river, B.C.	D. A. Nichols.
Peace River oil district, Sask.	K. G. Chipman.
Calabogie area, Ont.	C. H. Freeman.
Black Donald Graphite Co., and Renfrew Molybdenum Co. properties, Ont.	C. H. Freeman.

Control

Locality	Triangulator-in-charge
Britannia Beach and Vancouver, B.C. Triangulation control for Britannia Beach work and connexion to Vancouver	S. C. McLean.
Caribou, B.C. Triangulation control	S. C. McLean.
Michipicoten, Ont. Traverse control for geographical mapping	R. C. McDonald.
Maccan, N.S. Triangulation control	R. C. McDonald.

Fraser River Investigation

In addition to the regular work, the division was authorized to undertake the topographical surveying and mapping for the Board of Engineers, Department of Public Works, in connexion with their Fraser River investigation.

The topographical mapping required consists of a general map, on the scale of 2,000 feet to the inch with a contour interval of 20 feet, of the region embraced in the study of the Lower Fraser river. This area includes the Fraser River delta, Vancouver, and Burrard inlet, and extends easterly as far as Pitt lake and Port Haney. Detail maps, on the scale of 1,000 feet to the inch, with a contour interval of 5 feet, were also required of Fraser river, from Sand heads to Douglas island above New Westminster; the north arm of Fraser river, and Burrard inlet from Prospect point, Vancouver, to Port Moody; the north arm of Burrard inlet was not included.

The detail maps being required first, they were undertaken this year. Field work was started early in May and was completed before the end of December, despite the fogs and rain that prevail throughout that locality in the late autumn. It was owing entirely to the energy and determination of the topographers that the field work was brought to a successful completion. The topographers in charge of the different areas were: A. C. T. Sheppard, Fraser River survey; J. R. Cox, north arm of the Fraser River survey; A. G. Haultain, Burrard Inlet survey.

The detail mapping when completed will consist of eighteen map sheets and three mathematical control sheets.

The control for the elevations throughout the work was furnished by the Geodetic Survey of Canada. Lines of precise levels were run and permanent and temporary bench-marks established over the whole region.

This division furnished the Hydrographic Survey, for use in connexion with their part of the investigation, with a control sheet, on the scale of 2,000 feet to the inch, showing the locations of triangulation stations, lighthouses, pile beacons, etc., between Sand heads and Point Grey.

S. G. Alexander of the draughting division was attached to the division to assist in all the work and has rendered very efficient services.

The division is indebted to Mr. K. M. Cameron, Assistant Chief Engineer, Department of Public Works, for materially assisting in the success of the work by providing facilities for transportation and housing for the field parties; to Dr. W. Bell Dawson, Superintendent of the Tidal and Current Survey, for tidal data received and for valuable advice in the various problems regarding the tides; to Mr. C. C. Worsfold, District Engineer, and Mr. F. H. Sheppard, Superintendent of Dredges, Department of Public Works, for their ready co-operation and assistance.

GEOGRAPHICAL AND DRAUGHTING DIVISION

C.-Omer Senécal, Geographer and Chief Draughtsman, reports that the work of this division was carried on on the same general lines as in previous years, the staff remaining unchanged. During the year, forty-one new maps were published and nineteen are, at present, in the hands of the King's Printer for engraving, lithographing, and printing. Thirty-five other maps are in the office in various stages of progress. Besides the above, a large number of sketch maps, diagrams, and figures were drawn for illustrating memoirs, etc.

Duties of the chief of this division in connexion with the Geographic Board of Canada were, as usual, attended to.

The following are lists of maps in progress at the Printing Bureau, and maps published during the past year:

SESSIONAL PAPER No. 26

Maps in Hands of the King's Printer, December 31, 1919

Number	Title	Date of requisition
	Dominion of Canada, base-map; scale, 100 miles to 1 inch	Dec. 10, 1919.
1784 to 1792	Nine geological diagrams of mine workings, Ainsworth Mining camp, Kootenay district, B.C	Dec. 2, 1919.
1641	Sandon, Kootenay district, B.C.; scale, 4,000 feet to 1 inch. Topographical map	July 4, 1919.
1584	Blairmore, Alberta, geology; scale, $\frac{1}{62,500}$	Aug. 8, 1918.
1752	Monitor, Alberta; scale, 3 miles to 1 inch. Topographical map	April 15, 1919.
1766	Explored routes in a belt traversed by the Canadian National railways, between Penhurst and Longlac, Ont.; scale, 4 miles to 1 inch	Nov. 29, 1919.
1553	Portions of the districts of Algoma, Sudbury, and Timiskaming, Ont.; scale, 8 miles to 1 inch	Dec. 11, 1919.
1793	Matachewan, Timiskaming county, Ont.; scale, 1 mile to 1 inch	Nov. 24, 1919.
1756	Beauceville, Beauce county, Que.; scale, 4,000 feet to 1 inch. Topographical map	Nov. 8, 1919.
1707	New Glasgow, Pictou county, N.S.; scale, 2,000 feet to 1 inch. Topographical map	July 2, 1919.

Geological Survey Maps Published During the Year 1919

Number	Title	Remarks
	Canada	
1746	Occurrences of platinum in Canada; scale, 200 miles to 1 inch	Economic geology.
1585	Mackenzie River basin, northwestern Canada; scale, 50 miles to 1 inch	Geology.
	British Columbia	
1706	Anyox, Cassiar district; scale, $\frac{1}{12,500}$	Topography.
1708	Bridge river, Lillooet district; scale, $\frac{1}{125,000}$	Topography.
1731	Mineral areas in the vicinity of Hazelton, Cassiar district; scale, 1·66 miles to 1 inch	Geology.
1732	Principal veins on mining properties, head of Juniper creek, Rocher Déboulé range; scale, 875 feet to 1 inch	Geology.
1741	Sketch map of Copper mountain, Lillooet mining division; scale, 1,600 feet to 1 inch	Geology.
	Traverse sections of the principal placer deposits, Cariboo district; scale, 200 feet to 1 inch	Geology.
1733	Principal veins on the Silver Standard mine, Hazelton; scale, 400 feet to 1 inch	Geology.
	Plan and elevations of main workings, Silver Standard mine, 1917, Hazelton; scale, 100 feet to 1 inch	Geology.
1742	Ainsworth, Kootenay district; scale, $\frac{1}{24,000}$	Topography and geology.
1749	Diagram showing mineral claims, Ainsworth mining camp, Kootenay district; scale, 2,400 feet to 1 inch	
	Prairie Provinces	
1774	Relief map of the Prairie provinces; scale, 100 miles to 1 inch	Physiography
1775	Structure contours showing top of Belly River sands; scale, 100 miles to 1 inch	Geology.
1776	Structure contours showing top of Lower Pierre shale; scale, 100 miles to 1 inch	Geology.
1777	Diagram showing depth from surface to top of Lower Pierre shale; scale, 100 miles to 1 inch	Geology.
1778	Structure contours showing Medicine Hat gas horizon; scale, 100 miles to 1 inch	Geology.
1779	Structure contours showing gas horizon near base of Colorado group; scale, 100 miles to 1 inch	Geology.
1780	Sketch of basin occupied by Upper Cretaceous sediments; scale, 100 miles to 1 inch	Geology.

Geological Survey Maps Published During the Year 1919—*Concluded*

Number	Title	Remarks
	Prairie Provinces	
1781	Structure contours showing oil and gas sand at base of Cretaceous; scale, 100 miles to 1 inch	Geology.
1782	Diagram showing depths from surface to oil and gas sand; scale, 100 miles to 1 inch	Geology.
	Well sections, arranged in west-east order, showing correlation of the geological formations	Geology.
	Well sections, arranged in west-east order in relation to sea-level	Geology.
	Well sections, arranged in south-north order, showing correlation of the geological formation	Geology.
	Well sections, arranged in south-north order, in relation to sea-level	Geology.
	Alberta	
1724	Sheep River; scale, $\frac{1}{63,360}$	Topography and geology.
	Saskatchewan and Manitoba	
1726	Athapapuskow Lake region; scale, 3 miles to 1 inch	Geology.
	Manitoba	
1763	Portions of Rex group of claims, Wekusko lake; scale, 200 feet to 1 inch	Geology.
	Ontario	
1750	Geological structure of the oil regions of Lambton county and adjacent portions of Middlesex and Kent counties; scale, 4 miles to 1 inch	Geology.
1758	Galena-calcite veins on lot 23, con. VI, Fitzroy township, Carleton county; scale, 400 feet to 1 inch	Geology.
	Diagrams illustrating sedimentation	Geology.
	Diagram showing sections along the Niagara escarpment of Ontario peninsula and Manitoulin island	
	Characteristic geological sections in Ontario peninsula	
	Diagram showing formations near Detroit river	
	Ontario and Quebec	
1739	Portions of Bristol, Onslow, McNab, Fitzroy, and Torbolton townships, Pontiac, Carleton, and Renfrew counties; scale, 1 mile to 1 inch	Geology.
	Quebec	
1680	Portions of Grenville, Harrington, Chatham, and Wentworth townships, Argenteuil county; scale, 1 mile to 1 inch	Geology.
1705	Thetford; Megantic, Wolfe, and Frontenac counties; scale, 4,000 feet to 1 inch	Topography.
1747	Stone available for road construction in the city and district of Montreal; scale, 1·15 miles to 1 inch	Economic geology.
1757	Molybdenite deposits exposed on lots 9 and 10, range VII, Onslow township, Pontiac county; scale, 400 feet to 1 inch	Geology.
1759	Iron ore deposits exposed on lots 21 and 22, range II, Bristol township, Pontiac county; scale, 400 feet to 1 inch	Geology.

PUBLICATION DIVISION

Marc Sauvalle, Chief of Publishing and Translating Division, reports that the following memoirs, museum bulletins, and summary reports were published during the calendar year 1919:

English Reports

1564. Memoir 104, Biological Series 3. *Birds of Eastern Canada*—by P. A. Taverner; pp. i-iii, 1-297; coloured plates, 50; figures, 68; edition, 7,000 copies; published, October 29, 1919.

SESSIONAL PAPER No. 26

1703. Memoir 111, Geological Series 91. *The Silurian geology and faunas of Ontario peninsula, and Manitoulin and adjacent islands*—by M. Y. Williams; pp. i-v, 1-195, plates, 34; figures, 6; maps, 2; edition, 2,500 copies; published September 25, 1919.

1713 Memoir 108, Geological Series 92. *The Mackenzie River basin*—by Charles Camsell and Wyatt Malcolm; pp. i-ii, 1-154; plates, 14; figure, 1; map, 1; edition, 3,000 copies; published, July 11, 1919.

1722. Memoir 116, Geological Series 98. *Investigations of the gas and oil fields of Alberta, Saskatchewan, and Manitoba*—by D. B. Dowling, S. E. Slipper, and F. H. McLearn; pp. i-ii, 1-89; plate, 1; figures, 4; maps, 9; edition, 3,500 copies; published, December 24, 1919.

1730. Memoir 107, Geological Series 90. *Road materials in the vicinity of Regina, Saskatchewan*—by L. Reinecke; pp. i, 1-28; map, 1; plates, 2; figures, 3; edition, 2,500 copies; published, May 1, 1919.

1734. *Summary Report of the Geological Survey, Department of Mines, for the calendar year 1917, Part F;* pp. 1F-36F; map, 1; figure, 1; edition, 3,000 copies; published March 12, 1919.

1735. Memoir 109, Geological Series 94. *The Harricanaw-Turgeon basin, northern Quebec*—by T. L. Tanton; pp. i-iv, 1-84; plates, 9; figures 2; map, 1; edition, 2,500 copies; published, August 14, 1919.

1736. Memoir 110, Geological Series 89. *Preliminary report on the economic geology of Hazelton district, B.C.*—by J. J. O'Neill; pp. i-iv, 1-51; plates, 10; figures, 5; maps, 3; edition, 2,500 copies; published, June 14, 1919.

1738. *Summary Report of the Geological Survey, Department of Mines, for the calendar year 1917, Part A;* pp. 1A-19A; edition, 3,000 copies; published, March 26, 1919

1740. Memoir 112, Geological Series 93. *Geology of the disturbed belt of southwestern Alberta*—by J. S. Stewart; pp. i-iii, 1-71; plates, 5; map, 1; edition, 2,500 copies; published July 22, 1919.

1743 *Summary Report of the Geological Survey, Department of Mines, for the calendar year 1918, Part B;* pp. 1B-72B, figures, 5; map, 1; edition, 3,000 copies; published, April 2, 1919.

1744 Museum Bulletin 29, Geological Series 36. *The discovery of a portage fauna in the Mackenzie River valley*—by E. M. Kindle: *New species of pelecypods from the Cretaceous of northern Alberta*—by F. H. McLearn; pp. 1-22; plates, 5; edition, 2,500 copies; published, October 18, 1919.

1745. Memoir 113, Geological Series 96. *Geology and mineral deposits of a part of Amherst township, Quebec*—by M. E. Wilson; pp. i-iii, 1-54; plates, 7; figures, 3; maps, 2; edition, 2,500 copies; published, October 8, 1919.

1748. *Summary Report of the Geological Survey, Department of Mines, for the calendar year 1918, Part G;* pp. 1G-19G; map, 1; edition, 3,000 copies; published, September 18, 1919.

1755. Memoir 114, Geological Series 95. *Road material surveys in the city and district of Montreal, Quebec*—by Henri Gauthier; pp. i, 1-52; plates, 4; figure, 1; map, 1; edition, 2,500 copies; published, September 25, 1919

1760. *Summary Report of the Geological Survey, Department of Mines, for the calendar year 1918, Part C;* pp. 1C-52C; figure, 1; edition, 3,000 copies; published, September 18, 1919.

1762. Museum Bulletin 30, Geological Series 37. *Gabbros of East Sooke and Rocky point*—by H. C. Cooke; pp. 1-48; figure, 1; map, 1; edition, 2,000 copies; published, November 15, 1919.

1764. *Summary Report of the Geological Survey, Department of Mines, for the calendar year 1918, Part D;* pp. 1D-19D; edition, 3,000 copies; published, September 18, 1919.

1768. *Summary Report of the Geological Survey, Department of Mines, for the calendar year 1918, Part F;* pp. 1F-36F; figures, 3, edition, 3,000 copies; published, September 18, 1919.

1769 *Summary Report of the Geological Survey, Department of Mines, for the calendar year 1918, Part E;* pp. 1E-47E, figures, 7; map, 1; edition, 3,000 copies; published October 31, 1919.

1791. *Summary Report of the Geological Survey, Department of Mines, for the calendar year 1918, Part A;* pp. 1A-20A; edition, 3,000 copies; published, December 1, 1919.

Report of the Canadian Arctic Expedition 1913-1918—volume III: *Insects—Separates:*

Part A, *Collembola*—by Justus W. Folsom; pp. 1A-29A; plates, 8; edition, 3,000 copies, published, July 10, 1919.

Part B, *Neuropterid insects*—by Nathan Banks; pp. 1B-5B; plate, 1; edition, 3,000 copies; published, July 11, 1919.

Part C, *Diptera: Crane-flies*—by C. P. Alexander, *Masquitoes*—by H. G. Dyar, *Diptera*—by J. R. Malloch, pp. 1C-90C; plates, 10; edition, 3,000 copies; published, July 14, 1919.

Part D, *Mallophaga*—by A. W. Baker, *Anoplura*—by G. F. Ferris and G. H. F. Nuttall, pp. 1D-12D; plate, 1; edition, 3,000 copies; published, September 12, 1919

Part E, *Coleoptera: Forest insects*—by J. M. Swaine, *Carabida and sulphida*—by H. C. Fall, *Coccinellida*—by C. W. Leng, *Dystiscida*—by J. D. Sherman, jr.; pp. 1E-27E; plates, 3; edition, 3,000 copies; published, December 12, 1919.

Part F, *Hemiptera*—by Edward P. van Duzee; pp. 1F-5F; edition, 3,000 copies; published, July 11, 1919.

Part G, *Hymenoptera and plant galls: Saweflies-tenthredinoidea*—by Alex. D. MacGillivray, *Parasitic hymenoptera*—by Chas. T. Brues, *Wasps and bees*—by F. W. L. Sladen, *Plant galls*—by E. P. Felt; pp. 1G-38G, plates, 2; edition, 3,000 copies; published, November 3, 1919.

Part H, *Spiders*—by J. H. Emerton, *Acarina*—by N. Banks, *Chilopoda*—by R. V. Chamberlin; pp. 1H-22H; plates, 4; edition, 3,000 copies; published, July 14, 1919.

Report on *Indian canoes*—by F. W. Waugh. Reprint from the Ottawa Naturalist; edition, 350 copies; published, November 4, 1919.

Report on *birds of Red Deer river*—by P. A. Taverner. Reprint from the Ottawa Field Naturalist; edition, 250 copies; published, September 18, 1919.

Report on *field study of life histories of Canadian mammals*—by R. M. Anderson; edition, 250 copies; published, November, 1919.

French Translations

1753. *Rapport sommaire de la Commission géologique, du ministère des Mines, pour l'année civile 1917, Partie A;* pp. 1A-19A; edition, 1,000 copies; published, June 17, 1919.

1761. Mémoire 103, Série géologique 86. *Le comté de Timiskaming*—by M. E. Wilson, pp. i-vi, 1-177; plates, 16; figures, 6; map, 1; edition, 1,000 copies; published, October 9, 1919.

1765. Bulletin du Musée no 27, Série géologique 35. *Etude sur la minéralogie du district de Black Lake, Québec*—by Eugène Poitevin and R. P. D. Graham; pp. 1-103; plates, 12; figures, 22; edition, 1,000 copies; published, November 20, 1919.

ACCOUNTANT'S STATEMENT

By P. R. Marshall

The funds available for the work and the expenditure of the Geological Survey for the fiscal year ending March 31, 1919, were:

—	Grant	Expenditure
	$ cts	$ cts.
Amounts voted by Parliament	500,504 64	
Civil list salaries		202,008 03
Explorations in British Columbia and Yukon		29,982 78
Topographical surveys in British Columbia		12,803 73
Explorations in Northwest Territories		23,015 04
Topographical surveys in Northwest Territories		4,579 25
Explorations in Ontario		10,652 71
Topographical surveys in Ontario		3,568 04
Explorations in Quebec		6,903 46
Explorations in Nova Scotia		4,934 32
Topographical surveys in Nova Scotia		1,214 14
Explorations in general		1,220 40
Palæontological investigations		2,887 15
Ethnological investigations		2,697 28
Boring operations		3,442 50
Publication of reports		23,380 74
Translation of reports		275 55
Publication of maps		6,722 06
Wages, temporary employees		21,574 87
Stationery, mapping material, and sundry printing		6,949 80
Miscellaneous		4,661 03
Library		4,205 74
Instruments and repairs		2,215 59
Civil government contingencies		2,000 00
Photographic supplies		1,813 04
Specimens for Museum		1,364 63
Laboratory		903 11
Postages and telegrams		874 76
Lyons Fair		772 98
Biological Division		558 01
Compensation to J. F. Lyons in lieu of quarters, fuel, and light		400 00
Miscellaneous gratuities		600 00
War bonus		16,619 64
Balances of advances unaccounted for in 1918-19 to be accounted for in 1919-20		2,500 00
Balance unexpended and lapsed		92,204 26
	500,504 64	500,504 64

Summary

—	Grant	Expenditure	Grant not used
	$ cts.	$ cts.	$ cts.
Civil government appropriation	248,385 00	202,008 03	46,376 97
Explorations and surveys in Canada	130,000 00	113,678 18	16,321 82
Publication of reports and maps	55,000 00	30,378 35	24,621 65
Purchase of books, instruments, miscellaneous	45,000 00	41,251 55	3,748 45
Purchase of specimens	2,500 00	1,364 63	1,135 37
Compensation to J. F. Lyons for quarters, fuel, and light	400 00	400 00	
Civil government contingencies	2,000 00	2,000 00	
Miscellaneous gratuities	600 00	600 00	
War bonus	16,619 64	16,619 64	
	500,504 64	408,300 38	92,204 26

Casual Revenue

Sales of equipment	$ 232 04	
Sales of publications	37 70	$ 269 74

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SUMMARY REPORT

OF THE

MINES BRANCH

OF THE

DEPARTMENT OF MINES

FOR THE CALENDAR YEAR ENDING DECEMBER 31

1919

PRINTED BY ORDER OF PARLIAMENT.

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

To His Excellency The Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc., Governor General and Commander-in-Chief of the Dominion of Canada.

May it Please Your Excellency,—

The undersigned has the honour to lay before Your Excellency, in compliance with 6-7 Edward VII, chapter 29, section 18, Summary Report of the work of the Mines Branch of the Department of Mines during the calendar year ending December 31, 1919.

(Signed) **Arthur Sifton,**

Minister of Mines.

Hon. Arthur Sifton,
Minister of Mines,
Ottawa.

Sir,—I have the honour to submit herewith, the Director's Summary Report of the work of the Mines Branch of the Department of Mines during the calendar year ending December 31, 1919.

I am, Sir, your obedient servant,

(Signed) Charles Camsell,
Acting Deputy Minister.

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SUMMARY REPORT

OF THE

MINES BRANCH OF THE DEPARTMENT OF MINES FOR THE CALENDAR YEAR ENDING DECEMBER 31, 1919.

INTRODUCTORY.

The cessation of hostilities in the closing months of the year 1918, had a marked effect on the mineral production of Canada. The demand for minerals needed in the production of munitions and materials for war purposes having ceased, and this condition being immediately followed by a period of inactivity before readjustment and reconstruction could take place, contributed, to a large extent, to the decrease in the mineral output for the year 1919.

The Mines Branch has, however, during the year, continued its several activities to the fullest extent that could be accomplished with the present complement of technical officers.

The investigations undertaken in the field, consisted of examinations of both metallic and non-metallic deposits; while the work assigned to the several physical, chemical, and testing laboratories located at Ottawa, covered a wide scope, including the examination of, and reporting upon, mineral specimens, and the testing of ores, metals, fuels, oils, and gases. Supplementary to this class of work, mention might be made of the assistance given by way of technical advice to mining companies, prospectors, and others connected with the general mining industry of the country, in the solution of the technical problems and difficulties encountered during mining operations; or, on their application for information concerning certain mineral districts.

During the course of the year several publications were issued for general distribution, including the usual statistical reports, together with several special technical reports, all of which may be had on application.

Reference to the reports issued, and to the special work done by the different officers of the several divisions of the Mines Branch, will be found in subsequent sections of this annual Summary Report.

ORE DRESSING AND METALLURGICAL DIVISION.

During the progress of the war the work of this Division was confined, primarily, to those minerals which entered into the manufacture of munitions. On the cessation of hostilities, this class of work—which was, for the most part, of a commercial character—was discontinued, and the laboratories have been used entirely for the purpose of testing Canadian ores and minerals of economic interest. The report by the acting chief and officers of the Division with regard to the actual work undertaken during the year, is to be found on pages 54-59.

During the year the technical staff of the Division was depleted by resignations, the Chief Engineer and two chemists leaving the employ of the Government to accept more remunerative positions with private commercial concerns. The depletion of staff had the effect of curtailing a large amount of important work which otherwise would have been carried on.

FUELS AND FUEL TESTING.

On account of the disorganization of this Division through resignations of certain members of the staff, it has been impossible to carry to completion investigations which had been planned.

During this year Mr. Ross E. Gilmore, who was in charge of the research work on low temperature carbonization and briquetting of fuels; and Mr. Thomas W. Hardy who was in charge of gas analyses and other work, resigned; and it was impossible at the salaries offered to fill their places. The special work they were conducting was consequently very greatly hampered, and in certain cases discontinued altogether.

In addition to the above depletion in the chemical staff of the Division of Fuels and Fuel Testing, the services of the Chief Engineering Chemist, Mr. Edgar Stansfield, have been lost to a large extent through his association with the Lignite Utilization Board, to which he has been attached as Chief Chemist, hence the work of the Chemical Laboratories was seriously handicapped.

The research work concerning the distillation of the oil shales of New Brunswick and elsewhere, was begun; but on account of the above depletions in the staff, the difficulty of filling vacancies, and of obtaining additional assistants, the work of investigating the samples of oil shale collected by Mr. Wright, of the Geological Survey, was seriously retarded.

A large part of the time of Mr. John Blizard and Mr. E. S. Malloch was devoted to the preparation of a report on forty-one steaming tests, and producer gas tests for the press. Mr. Blizard also did considerable work in connexion with a report on powdered fuels, which he was preparing to write.

Mr. Malloch, in addition to his regular routine work, made a number of pyrometer calibrations, and carried out certain determinations of tensile compressive strength and hardness, on samples of steels.

The Chief of the Division of Fuels and Fuel Testing, in addition to his regular duties as Chief of that Division, devoted a large amount of his time to the Peat Committee—of which he is secretary—also to the Dominion Power Board. Moreover, he prepared during the course of the year a number of special reports on fuels.

The staff of the machine shop was continually occupied in constructing new apparatus, erecting new, and repairing existing machinery.

METALLIFEROUS MINES DIVISION.

The investigation of pyrites deposits—undertaken during the previous year by Dr. A. W. G. Wilson, Chief of the Division—was continued, about two months being spent in Ontario and Quebec visiting reported occurrences of pyrites.

The balance of the year Dr. Wilson was engaged in completing his report on potash recovery at cement plants, which work was undertaken at the request of the War Trade Board. The report was published early in the year, and the demand for it was such that the edition soon became exhausted. In addition, the Chief of the Division devoted his attention to the preparation of an extensive report on the Development of the Metallurgical and Chemical Industries of Canada, which publication it is expected will be ready for distribution some time during the current year.

The services of Assistant Engineer, Mr. A. H. A. Robinson, were loaned to the Ontario Bureau of Mines, to make certain magnetometric surveys in the vicinity of Windy lake, Sudbury district. Later in the season, Mr. Robinson investigated certain titaniferous iron ore deposits. The preliminary report of the work done by this official may be found on page 13.

SESSIONAL PAPER No. 26a

INVESTIGATION OF MINERAL PIGMENTS.

Large quantities of minerals are used by paint manufacturers; and although a considerable amount of these are furnished from domestic sources, it is found that a considerable supply is brought in from other countries.

The investigation was undertaken to prove up the deposits of mineral pigments throughout Canada, with a view to directing users of this commodity to sources of domestic supply, so that they might avail themselves of the Canadian product instead of depending upon importations.

Mr. Howells Frèchette was assigned to this work, and his report of the field season's activities in this connexion is detailed on pages 17-19.

INVESTIGATION OF CERTAIN NON-METALLIC MINERALS.

Mr. H. S. Spence was commissioned to secure data on deposits of talc, soapstone, barytes, celestite, and strontianite. Field work was confined to Ontario, Quebec, and Nova Scotia.

A preliminary report on the localities visited in carrying out, during the season, the work assigned, may be found on page 19.

CHEMICAL LABORATORIES.

The general mining public have taken full advantage of the facilities offered by the Mines Branch chemical laboratories for assistance in connexion with the development of the mineral resources of Canada. The usual variety of work was undertaken, and completed; a considerable quantity of the material treated being furnished by Mines Branch officials, as well as by officers from other government departments, also by mining concerns, prospectors, and others.

In addition, considerable work of a research character was assigned, the services of the depleted staff of chemists being severely taxed to keep abreast of the several investigations. The report of the Chief Chemist appears on pages 27-30.

DOMINION OF CANADA ASSAY OFFICE, VANCOUVER, B.C.

The business done at the Assay Office during the year 1919 compared quite favourably with that of former years; the amount of gold bullion deposited exceeding that of any previous season, with the exception of the year 1918. The policy of shipping to the Royal Mint at Ottawa all the gold bullion purchased at the Vancouver office was continued.

The deposits made at the Assay Office during the year totalled 1,391, and came from British Columbia, Yukon Territory, Alberta, and Alaska, the net value being $3,547,524.93.

The practice of purchasing platinum was discontinued at the beginning of the year; but it was decided to still give assistance to the prospectors, by continuing to accept platinum ores and sands for treatment, and thus assist in marketing the refined product, locally.

DIVISION OF MINERAL RESOURCES AND STATISTICS.

During the year the staff of this division has been occupied, for the most part, in collecting data relative to the mining and metallurgical industries of Canada, and in preparing the Preliminary and the Annual Mineral Production reports, and, in response to special inquiries, numerous memoranda, relating to our mineral resources and mining activities, were prepared and sent out.

Furthermore, the division keep in close touch with the production of certain important mineral products, such as iron and steel, coal, chromite, sulphuric acid, etc., by compiling a monthly or quarterly record of the output of these materials. The former arrangement with the Department of Trade and Commerce, whereby the completed files of our Statistical Division were made accessible to the Dominion Bureau of Statistics, was continued throughout the year.

In a succeeding section of this Summary Report is to be found a more completed record of the work of the division submitted to the Chief Statistician.

CERAMIC DIVISION.

The work of this division covers a wide scope; since not only does it concern itself with investigating the available deposits of raw materials that enter into the ceramic industries, but must meet the growing demand for information with regard to the various finished clay products.

Because of the difficulty in securing duly qualified technical assistants, very little research work could be undertaken, the limited staff being fully occupied with routine work, and the answering of inquiries relative to the clay and shale resources of the country.

In addition to the usual laboratory investigations, the work of the division during the year consisted in making a survey of the structural materials deposits in a portion of the St. Lawrence River valley, and an examination of deposits of high-grade clays, in northern Ontario.

References more or less in detail to the work of the division as carried out by the chief engineer and his assistants are given in a succeeding section of this report.

ROAD MATERIALS DIVISION.

Work on the general problems which have been undertaken by the Road Materials Division was continued during the year. The Chief of the Division spent part of his field season in Manitoba, where an investigation of materials available for rural road construction in a typical prairie area is being conducted. This work has developed primarily into a study of aggregates composed of the various natural soil types, modified by admixture of sand or gravel, or by some other form of treatment, with a view to producing—with the materials at hand, under prairie conditions—an aggregate that will give serviceable results in a rural road-bed or surface. Time was also spent, in response to requests from officials of the Department of the Interior, at Rocky Mountains Park. A similar road material problem exists in the mountainous country, where it is necessary to secure stable aggregates by the utilization of the variable types of material encountered in establishing the road grades along the steep mountain sides.

The problem of developing the general method of conducting material surveys, and of sampling and testing road materials—the problem which has been presented to the Road Materials Division in conducting work in Ontario and Quebec—was continued by Messrs. Gauthier and Picher. A section of the route from Toronto to Montreal was examined in detail, and some miscellaneous work in surveying and sampling completed.

The Road Materials Laboratory has been working to capacity conducting tests and investigational work which are supplementary to the field work of the Division.

TECHNICAL LIBRARY.

During 1919, the Library has been broadened very appreciably; for not only have many new and desirable publications of interest to the various Divisions of the Mines

Branch been secured; but, in addition, very valuable files of technical publications suited to the requirements of the Road Materials Division have been assembled.

Many of the most important technical institutions of Europe, which suspended activities during the war, have reorganized, and the Library, which is used as a "laboratory," has benefited intrinsically by receiving the publications of these institutions, which constantly do service in investigation work.

A number of recent trades catalogues, which have proved to be an indispensable factor toward keeping the Mines Branch staff informed as to the latest analytical and metallurgical instruments and methods, have been secured.

Accessions for the year:—

Books (by purchase)	98
Books (by gift)	35
Books (bound)	194
Canadian Government documents (by exchange)	604
Foreign Government documents (by exchange)	1,307
Scientific Institutions Proceedings (by exchange)	517
Pamphlets (by gift)	107
Trades Catalogues (by gift)	58
Maps (by exchange)	77
Total accessions for 1919	2,997

(*Signed*) Eugene Haanel.
Director.

INDIVIDUAL SUMMARY REPORTS.

METALLIFEROUS MINES DIVISION.

I.

ALFRED W. G. WILSON, *Chief of Division.*

This division employed only two permanent officers for field service, and one library assistant, during the year 1919.

Mr. A. H. A. Robinson devoted the whole of his time to work relating to iron ore deposits. In the month of March the services of this officer were loaned to the Ontario Bureau of Mines to assist on the geologic mapping of an area in the vicinity of Windy lake, Sudbury district, by means of magnetometric surveys of areas below the level of the lake. The summer field season was devoted to an investigation of our titaniferous iron ore resources. Mr. Robinson's preliminary report on this work is attached hereto.

Dr. Alfred W. G. Wilson, chief of the division, devoted only a portion of his time to work of this division. In addition to routine office work—which included the preparation of a number of replies to inquiries relating to the mining and production of metals and ore, and to questions in non-ferrous metallurgy—about two months were spent during the field season in central Ontario; and in Quebec during the months of September, October, and November, visiting reported occurrences of pyrites. Additional information was obtained for office use and for incorporation in a second edition of the report on "Pyrites and its Uses." The greater portion of Dr. Wilson's time during the year was devoted to work arising from his investigations during the war period, in the preparation of reports on potash recovery at cement plants, and development of the metallurgical and chemical industries of Canada.

An investigation of the processes in use in the United States in cement plants, for the recovery of potash salts from waste flue gases, was undertaken in 1918, on the initiative of the War Trade Board. The field work in connexion with this investigation was not completed until December, and the report was prepared early in the year. The completed manuscript was sent to the printer in May, and the Report on Potash Recovery at Cement Plants was issued in July, 1919. Dr. Wilson also delivered illustrated addresses on this subject before the Toronto Branch of the Society of Chemical Industry, and before the Montreal Metallurgical Society. The Canada Cement Company is installing potash recovery equipment at the Port Colborne (Ontario) plant. It is expected that this equipment will be in operation in June, 1920. An unexpected demand for this report exhausted the supply within six weeks of issue. The complete report was republished by a technical journal in the United States, and by another journal in Great Britain. The main portion of the report, based on Dr. Wilson's address in Toronto, was also published in the Journal of the Society of Chemical Industry, so that, in effect, four editions of this report were published within four months of issue.

Progress has been made in the preparation of a very extensive report on the development of the metallurgical and chemical industries in Canada. This report will deal with the principal industries using minerals or chemicals and other products made from minerals. A comprehensive survey of Canadian metallurgical and chemical

industries has been made, to ascertain what raw materials are required; where these supplies originate; and where the finished products are marketed. It is thought that, in some cases, native raw materials can be substituted for imported supplies, and there are finished products that might well be made in Canada. This report, and the information it will contain, should facilitate the further development of our natural resources, and should contribute to the expansion of home industries.

The library research work in this division has been maintained throughout the year by Miss D. M. Stewart. An extensive index of metallurgical and chemical products made in Canada, and a directory of the uses of raw mineral products has been compiled for use in the Report on the Development of the Metallurgical and Chemical Industries in Canada.

II.

INVESTIGATION OF IRON ORE DEPOSITS IN NORTHERN ONTARIO.

A. H. A. Robinson.

The winter months of 1919 were spent in the usual routine office work, viz., the preparation of reports and maps, answering inquiries about iron ores and the iron industry, abstracting and filing information concerning Canadian iron mines and iron ore deposits, etc.

In March, at the request of the Ontario Bureau of Mines, a magnetometric survey was made on the ice at Windy lake, in the Sudbury nickel area; where it was hoped magnetic indications might be found that would lead to the discovery of hidden deposits of nickeliferous pyrrhotite along the granite-norite contact that is here covered by the lake and by sand hills. Had the magnetometric survey indicated the probable presence of pyrrhotite, it was the intention of the Bureau of Mines to explore the lake bottom by diamond drilling. No abnormal magnetic disturbance was found in the neighbourhood of the lake, however, and, investigations by Bureau of Mines geologists having also failed to discover any indication of the presence of ore bodies, the proposed drilling was not undertaken.

The summer and autumn months were spent in a field investigation of titaniferous iron deposits in Canada, and in visiting, for the purpose of noting recent developments, the iron ore districts in northwestern Ontario, in the vicinity of Sault Ste. Marie, Sudbury, and Port Arthur.

TITANIFEROUS IRON ORES.

In Canada, all the known deposits of titaniferous iron ore of any considerable size or importance are to be found in the provinces of Quebec and Ontario. These deposits first attracted attention as possible sources of supply for iron furnaces, and several unsuccessful attempts were made in years past to establish local iron industries based on their use. Later, with the increasing demand for titanium in various industries, the deposits richer in that metal acquired a value for their titanium contents, irrespective of the iron. Still more recently, the fact that vanadium, in minute quantities, is often found associated with the titaniferous iron ores, has led to an investigation of the possibilities of such ores for the commercial production of vanadium, or vanadium steel.

In the province of Quebec, there are—in addition to a number of points of minor interest—four widely separated localities in which large and important bodies of titaniferous iron have been found. They are: Ivry-on-the-Lake, Beresford township, Terrebonne county; St. Urbain, in Charlevoix county; Bourget township, in Chicoutimi county; and at the Bay of Seven Islands, on the north shore of the lower St. Lawrence.

At St. Urbain and Ivry, at both of which places the ore is ilmenite, carrying 18 per cent and upwards of titanium, the deposits have been worked more or less intermittently—St. Urbain since 1910, Ivry since 1912. Most of the material shipped has gone to Niagara Falls, N.Y., to be used in the production of ferro-titanium, but any large or continuous production for this purpose has been hindered by the competition of high grade rutile and ilmenite concentrates from Virginia and Florida. In one of the deposits at St. Urbain, there is in addition to ilmenite sufficient associated rutile to give the deposit the distinction of being the only known occurrence of rutile in commercial quantity in Canada, and one of the four or five recorded occurrences in commercial quantity in the world.

The deposits in Bourget township, and those at Bay of Seven Islands are titaniferous magnetite, carrying for the most part less than 15 per cent titanium and about 50 per cent iron. They are in the unfortunate position of carrying too little titanium to have value as titanium ores, but too much to find favour as iron ores. Practically no development has been done in the deposits at either of those places.

In Ontario, so far as is known, all the deposits of magnetite large enough to be of possible economic importance are mostly titaniferous; and, like those in Bourget township, and at Seven Islands, in Quebec, are, in their natural condition, too low in titanium for titanium ore, and too high for iron ores. The most extensive of the Ontario deposits are those that have been traced by their outcrops, and by means of dip needle readings for a distance of 12 or 14 miles along the north shores of Seine bay and Bad Vermilion lake, in the Rainy River district. Diamond drilling has shown that they extend vertically with undiminished thickness, in at least one place, to a depth of nearly 500 feet below the highest outcrop. The better grades of the Seine Bay ore will run between 40 and 50 per cent in iron, with titanium in some cases as nigh as 15 per cent.

Less extensive deposits occur in numerous other localities throughout Ontario, among those more generally known are: the Matthews and Chaffey mines, in Leeds county, which were worked as iron mines in the sixties and seventies of the last century; the Orton mine, in the townships of Tudor and Lake, Hastings county, small shipments from which were used experimentally in the production of tool steel direct from the ore; and the so-called Pine Lake or Pusey mine, in the township of Glamorgan, Haliburton county. In much of the literature dealing with titaniferous iron deposits in Canada, the Pine Lake deposit is referred to as being one of the largest and most important: an assumption apparently based on incomplete investigations, or even on hearsay evidence, that is not borne out by recent investigations. A surface examination of the area—the deposit is entirely undeveloped—leads to the conclusion that the titaniferous magnetite here, like that at the Orton mine, 34 miles to the southeast, does not form one large continuous body, as was assumed, but consists of comparatively small, ultra-basic segregations, irregularly scattered through a mass of black, basic, igneous rock that on casual inspection might be mistaken in large part for magnetite. A sample of the richest looking material that could be found yielded only 31 per cent iron and 7·54 per cent TiO_2.

As regards the outlook for the utilization of the titaniferous ores, those high in titanium, like the ilmenites at St. Urbain and Ivry, have been, to some small extent, mined for export to the United States, as ores of titanium, and were it not for the competition of higher grade ores from Virginia and Florida, there would no doubt

be a steady demand for the Quebec product. Up to the present there has been no domestic market for such ores. With the increasing use of titanium and its compounds, it is not unreasonable to expect that the Quebec ilmenite deposits will sooner or later be in greater demand either at home or abroad.

The outlook for the titaniferous magnetites is more doubtful. Ore of this class was formerly smelted, like ordinary titanium-free magnetites, in charcoal blast furnaces in Norway, Sweden, England, and the eastern United States; and trial runs in a modern coke blast furnace, extending over sufficient periods of time as to leave little doubt as to the accuracy of the results obtained, appear to have clearly demonstrated that when suitably fluxed and smelted under proper conditions of temperature and pressure of blast, they are as easy to smelt as titanium-free magnetites. Nevertheless their use for iron-making has ceased entirely, and they are now in hopeless disrepute with blast furnace men. Leaving out of consideration for the moment their titanium content, there are also other possible reasons why greater interest has not been shown in the efforts made to promote their use. They are only low to medium grade in iron content, and would usually require concentration before they could be used in the blast furnace. Furthermore, the mode of occurrence of most of the deposits is not such as to render them amenable to the most economical methods of mining, and the production of the large and steady output demanded by modern blast furnace practice.

In some quarters, the introduction of the electric furnace has revived the hope of utilizing the titaniferous iron ores, either for the production of high class pig-irons, or for their direct reduction to high grade steel. Both pig-iron and tool steel have been successfully produced from titaniferous ores in an experimental way in the electric furnace, and it is quite possible that where conditions are favourable, local industries of this kind may yet be established. It is not clear, however, that even for this purpose, titaniferous ores will have any special advantage over equally available titanium-free ores, unless it is found possible—and also profitable—to recover titanium or vanadium as well as the iron.

The fact that titaniferous magnetites are to a large extent, if not entirely, made up of mechanical mixtures of ilmenite and magnetite, at once suggests the possibility of separating them magnetically into a high grade, non-magnetic, ilmenite product on the one hand, and titanium-free magnetic iron ore on the other. Efforts in this direction have met with only partial, but widely varying success. In some cases the proportion of titanium to iron can be brought low enough to make practicable the mixing of the concentrates with non-titaniferous ores, and thus render the titanium content negligible. It is also in some cases possible to obtain a high ilmenite product that would do for titanium ore; but to make a magnetite concentrate free from titanium has been found practically impossible, either on account of the extremely intimate intermixture of the ilmenite with the magnetite, or because a portion of the titanium is contained in the magnetite molecule itself.

IRON ORE DEVELOPMENTS.

The Helen hematite mine in the Michipicoten district has been worked out, and was finally abandoned in April, 1918. This deposit furnished most of the native ore smelted in Ontario furnaces since it began to produce in 1900, and its passing marks the end of the largest body of high grade iron ore yet exploited in Ontario, or, for that matter, in Canada. The total production from the time the mine first shipped in 1900 until its abandonment in 1918, was, in round numbers, two and three quarter million tons of 2,000 pounds.

The siderite deposits that lie alongside the now worked out hematite body at Helen mine, and that were explored by diamond drilling in 1916 and 1917, have been

opened up by an adit 890 feet in length, connecting with three main branches aggregating a further 800 feet in the ore body itself. The quantity of ore developed by these operations is very large, constituting probably the largest single reserve of iron ore yet developed in Canada. The Algoma Steel Corporation's engineer's estimate is that there are 100,000,000 tons in the whole deposit; 10,000,000 tons of which are above the tunnel level, and can be won without hoisting. The siderite, in its natural state, runs about 37 per cent of iron, and can be roasted, like the Magpie siderite, with which it compares favourably, to 50 per cent or better in iron. Owing to the high cost of labour and material the work still necessary to put these deposits on a producing basis was suspended in October, 1918, and has not since been resumed.

At the Moose Mountain mine in the Sudbury district large reserves of low grade magnetite, amenable to magnetic concentration, have been proved by diamond drilling and development work. Mining is confined to the No. 2 deposit, which has been opened up by means of an adit 10 by 11 feet in cross section and 350 feet long. Where it hits the ore body, the adit branches into two main drifts, one of which follows the foot wall, the other the hanging wall of the deposit for a distance of between 500 and 600 feet. The drifts then come together again, forming a loop for haulage. Stoping is carried on above both drifts. The ore is won partly by open pits, partly by shrinkage stoping, and is drawn from the stopes through chutes on the adit level. Mining is carried on in the shrinkage stopes during that portion of the year when climatic conditions make open cast working difficult and dangerous. Sufficient ore has been developed above the adit level to take care of all probable requirements for some years to come. The average iron content is about 35 per cent, which is increased to 60 per cent and over in the mill.

The concentrating mill is still operating on a more or less experimental basis, but all technical difficulties appear to have been overcome, and high grade briquettes—over 60 per cent iron with negligible amounts of phosphorus and sulphur—are being produced in quantity. Shipments of briquettes in 1918 amounted to 26,385 tons; when the plant was visited in September 1919, no shipments were being made, the output of the mill being stockpiled awaiting a favourable market.

As having a bearing on the outlook for financially successful operation at Moose mountain, it is of interest to note that exhaustive experiments carried out on lean magnetites found at the eastern end of the Messabi range, which appear to be very similar to the Moose Mountain magnetite, are said to have demonstrated the commercial feasibility of treating such material by magnetic concentration, and the announcement is made that a plant for this purpose, capable of handling 4,000 tons per day, will be in operation at Duluth before the end of 1920.

In the Thunder Bay district, Cleveland, Ohio, parties have undertaken to do some 5,000 feet of diamond drilling on the P. A. Leitch claims, on what is known as the Central Iron Range, east of Lake Nipigon. When the district was visited, in September, 1919, only 1,800 feet of this had been completed, and no authoritative statement of the results obtained was available.

Some diamond drilling, to fulfil the requirements of the Ontario Mines Act, regarding assessment work, was also done on the north side of Seine river at the outlet of Steeprock lake, west of Port Arthur. The surface showings consist of bands of rusty weathering carbonate, associated with greenstones and green schists, and small packets of limonite, from a few inches to a few feet in diameter. Considerable small float of fairly good hematite has also been found. So far as could be learned no merchantable ore was found in the drill holes.

NON-METALLIFEROUS MINES DIVISION.

I.

IRON OXIDE PIGMENTS IN THE PROVINCE OF QUEBEC.

Howells Fréchette, *Chief of Division.*

The paint manufacturers of Canada consume large quantities of minerals, many of which are procurable in the country. Although considerable domestic material is used at present, the proportion of imported is very large. It has been decided to prepare a bulletin on the mineral pigment resources of Canada, in order to show the available sources of supply of such minerals as are used in the paint industry. While fairly complete information concerning a number of the more important of these minerals is available, scattered throughout various departmental reports, there is little dealing with the iron oxide pigments.

During the field season of 1919, work was commenced in the Province of Quebec, on the examination of deposits of ochres.

Many deposits of ochre have been reported from various sections of the Province. Practically all of these, with the exception of certain remote deposits and those lying east of Quebec, have been visited, and, where it was deemed desirable, samples were taken for laboratory examination and testing. In the southern part of the Province no large deposits of ochre were seen, and but few that have any commercial possibilities.

THREE RIVERS AND VICINITY.

The more important occurrences of ochre lie to the north of the St. Lawrence river. One group of such deposits is situated a short distance to the east of Three Rivers, between Cap de la Magdelaine and Champlain, about two miles north from the St. Lawrence. In this area, at Red Mill, the Canada Paint Company, Ltd., operates an extensive plant for calcining, washing, and grinding pigments from its deposits. A variety of shades of red, umber, and sienna are produced.

The plant and deposits of the Champlain Oxide Co. are about 1½ mile east of Red Mill. This company operates a calcining plant, which is situated near the deposits, and a grinding and packing plant beside the Canadian Pacific Railway tracks.

For a number of years Thomas H. Argall, of Three Rivers, produced calcined red oxide from his deposits two miles east of those of the Champlain Oxide Co. Owing to labour troubles, he closed his plant and transferred his business to Pointe du Lac, where he now ships uncalcined ochre for use in the purifying of illuminating gas. He obtains this material from a series of deposits lying about one mile to the north of his warehouse, which is beside the Canadian Pacific Railway tracks, nine miles west of Three Rivers.

About thirty years ago the Radnor Paint Company operated a calcining and grinding plant at Proulx, Champlain county. The crude ochre was obtained from rather irregular deposits along the beds of two small brooks which join and flow into the St. Maurice river a short distance south of Grandes Piles. This property is now owned by the Laurentide Company, of Grande Mere, and is within the area set aside by them for reforestation.

To the south of the St. Lawrence river, in the sixth range of Gentilly, there is a rather extensive deposit of ochre between the base of a high sand hill and the Gentilly river. In places the ochre is rather sandy. Several years ago this deposit was worked to a limited extent by Ouellet and Thibaudeau. Two small calcining furnaces are all that now remain of the equipment. The deposits are situated six or seven miles from the railway and hauling had to be done over poor roads.

PORTNEUF COUNTY.

About two miles to the southwest of St. Raymond, on the property of Remi Cayer, there is a deposit of ochre in a bog lying between the main road and the St. Anne river. This was worked on a small scale about 25 years ago by Piche and Allan. The bog, which is about four or five acres in extent, could be drained easily by means of a short ditch to the river bank. In places the ochre is very shallow, while elsewhere it exceeds six feet in depth. In general it is free from sand. This was the only deposit of any importance seen in this county.

MONTMORENCY COUNTY.

On the property of Joseph Racine, 1½ mile west of the Taschereau-Parent bridge over the St. Anne de Montmorency river, and lying about a quarter of a mile north of the road, there is a deposit of ochre of considerable extent. In shape it is somewhat like an open fan and measures about 1,000 feet by 500 feet. The depth, where ascertained, was found to range from a few inches to a maximum of less than ten feet, the average being about three feet. The ochre, in some parts of the bog, is underlain by woody peat which could not be penetrated by the sampler. It is possible that this peat may, in turn, be underlain by more ochre. It has been stated that samples of ochre were obtained at a depth of twenty feet or more. It may be that misleading results were obtained through using an open pipe sampler. Much of the ochre is free from grit, though sand is carried into portions of it by small brooks and by the overwash in very wet weather. This property has never been worked.

LABELLE COUNTY.

The Paint Products Co. of Canada, Ltd., has recently erected a large plant for washing, calcining, and grinding pigment at its ochre deposits on lot 18, range IV, Lynch township. The deposits are large and yield a variety of colours, both raw and calcined. In places the ochre is somewhat contaminated with sand, while elsewhere it is apparently free from grit. As yet only a preliminary examination has been made. It is said that between 25 and 30 acres are underlain by ochre. The maximum depth could not be determined, as it exceeded the length (12 feet) of the sampling drill.

While operating to a limited extent at the time of visit, in September, much of the work was still in the experimental stage. The nearest point of shipment is Annonciation, on the Mont Laurier branch of the Canadian Pacific Railway, which is distant fourteen miles by road.

DRUMMOND COUNTY.

In the southern section of the Province, as already pointed out, no large deposits of ochre were seen. One, however, is worthy of mention. While from a hurried examination the quantity of ochre did not appear to be great, it is of decidedly good quality. When wet it is bright yellow, and when ground in oil after air drying it produces a very good tone of sienna with strong tinting power. This deposit lies along a small stream on the farm of R. W. Billingsley, on lot 4, range IV, Durham township, Drummond county.

In addition to the deposits mentioned above, many of lesser importance were visited and sampled, in various sections of the Province, including the Ottawa valley as far west as Waltham.

The sampling was done by means of a drill designed especially for the purpose. It is similar to the regular open side scoop drill, but has a rotating shutter whereby the aperture may be closed while the drill is driven to the desired depth, opened to receive the sample, and again closed for withdrawing the drill. This drill was found to work well, and it is considered that the samples taken by it are truly representative of the material.

During the winter, the samples collected were tested in the laboratory to determine their worth as raw material for paint manufacture. A series of calcining tests was conducted under varying conditions of temperature and composition of atmosphere. A wide range of calcined colours were produced from the common "red oxide," to burnt umber and rich purples.

A full record of these tests will be included in the final report.

II.

INVESTIGATION OF MISCELLANEOUS NON-METALLIC MINERALS.

Hugh S. Spence.

The writer's field work consisted in gathering data on talc and soapstone, barytes, celestite, and strontianite, the territory covered including Ontario, Quebec, and Nova Scotia. In addition, fertilizer works in eastern Canada were visited, in order to bring up to date the information secured several years ago on the manufacture of artificial fertilizers in Canada. This information is required for a report on the phosphate deposits of Canada, which was prepared by the writer in 1915. The publication of this report was deferred during the war period, but it has now been decided to publish it, on account of the numerous inquiries that have been received by the Mines Branch for information respecting available supplies of phosphate in Canada.

In addition to examining deposits of the above-mentioned minerals, the writer visited a number of manufacturing plants using the minerals for industrial purposes, and gathered data regarding the requirements of the various industries.

The information secured is to be incorporated into separate reports on the minerals in question, which are to be published by the Mines Branch.

TALC AND SOAPSTONE.

ONTARIO.

The Canadian talc mining industry centres around Madoc and Eldorado, in Hastings county, Ontario, where there are at the present time three producing mines, each equipped with a grinding mill. These mills have a daily capacity of 80-90 tons of ground talc. The ore in each case is a white to cream crystalline talc, which grinds to a white powder that is much in demand for toilet purposes and paper-making. The talc occurs in the form of lenses in crystalline dolomite and is probably an alteration product of this rock. Quartz, dolomite and magnesite, in the form of grains and stringers, are the principal impurities in the ore, and the talc grades into dolomite at the borders of the lenses.

At one of the mines, the talc body is bordered on the east by crumpled, grey talc schist, and a separate mill is being equipped to grind this material, which is stated to be of excellent quality for foundry facings and rubber products.

The grinding equipment at all of these plants consists of pebble mills, the product of which is either air-floated or (in one instance) passed through flour-mill type bolters and scalpers.

The operating companies are: Eldorado Mining and Milling Company, Eldorado; Anglo-American Talc Corporation, and Henderson Mines, Ltd., both at Madoc.

As already noted, the talc of the Madoc district possesses crystalline character. The ore consists of a mass of small, shapeless folia which are usually elongated in one and the same direction, thus imparting to the rock a schistoid character. Massive, compact talc does not occur here, but specimens of what appears to be a rather hard, impure soapstone were collected on the waste dump at one of the mines. This material has a greenish-grey colour, is quite compact and without grain, but lacks the greasy feel of good quality soapstone. Cubes of the material, burnt at 1,000° C., became creamy-brown in colour and very hard, but were found to have developed slight checks. It is questionable, therefore, whether the material would prove suitable for gas burners and tips.

QUEBEC.

Soapstone of better quality, as regards purity, is found at several localities in Quebec province. A small quantity has been mined on lot 23 in range IV of the township of Melbourne, Richmond county, on land owned by the New Rockland Slate Company. The soapstone body is only 1 to 2 feet thick, and occurs in a shear zone in a very much altered and decomposed rock. The soapstone is compact and grey-green in colour. It would probably be excellent material for lining-blocks for the calcining furnaces in pulp mills and for lava purposes, but unfortunately it is friable and breaks up very readily into thin sheets. Owing to this characteristic, and considering the narrowness of the deposit, the occurrence cannot be regarded as of economic importance.

Soapstone, similar to the above, occurs also on lot 26 in range II of the township of Bolton, in Brome county. This deposit has a width of 7 feet at the point where it has been opened up, and has been traced for 400 feet along the strike. The soapstone is of good quality but is extremely friable.

A band of impure, greenish soapstone, 12 feet wide, occurs enclosed in serpentine on lot 5 in range V of Thetford township, Megantic county. The material is friable and breaks up readily into paper-thin leaves.

On lot 20 in range II of the township of Wolfestown, Wolfe county, a deposit of soapstone was worked a number of years ago. The material is said to have found employment in paints, lubricants and foundry facings. The workings are now inaccessible and none of the ore is available for examination.

Numerous narrow veins or seams of talc, none of them exceeding 1 foot in width, occur on lot 2 in Craig's Road range of Ireland township, Megantic county. The talc has a green colour and occurs as aggregates of large flakes (crystals), often associated with large crystals of ankerite. The talc bodies grade off into chlorite and talc schists, which form the country rock. While interesting mineralogically, this occurrence of talc would not appear to possess economic importance.

Soft, greenish-white talc occurs in narrow bands, not exceeding 2 feet in width, on lot 1 in range I, township of Inverness, Megantic county. This lot adjoins the preceding property.

Soapstone and talc have been reported to occur at a number of other localities in or adjacent to the serpentine belt of the Eastern Townships; bands of impure soapstone, usually quite narrow, being not uncommon in the serpentine proper as well as

in the altered basic intrusives (pyroxenites and chloritic, talc, and greenstone schists) associated with it. Many of the talc bands grade into talc or chloritic schist, and none of the deposits examined exhibited features that would warrant their being regarded as of particular economic importance. It is possible, however, that the friable soapstone at the localities listed above might give way in depth to a more massive and compact material.

None of the deposits have been actively exploited, shallow prospect pits representing the only development work. In view of the occurrence of important economic bodies of talc and soapstone, associated with similar rocks, in the adjoining state of Vermont, it is at least possible that closer investigation of the Quebec area would disclose larger deposits of these substances than those mentioned above.

BRITISH COLUMBIA.

A deposit of soapstone occurs at the base of Mt. Whymper, near Vermilion Summit, 11 miles south of Castle station on the main line of the Canadian Pacific railway. The writer visited the locality in 1915, and found the soapstone to occur in several irregular pockets or chimney-like bodies, enclosed in a grey, horizontally bedded dolomite. All the soapstone bodies occur at approximately the same horizon in the dolomite. They vary in width from 15 to 20 feet, the maximum vertical extent being 75 feet. The soapstone usually contains an appreciable amount of quartz, both massive, as stringers, and in the form of small, well formed crystals. Crystals of ankerite also occur in it. These minerals appear to occur chiefly near the contact of the soapstone with the dolomite.

The soapstone has a light yellowish-green colour and is of good quality. Unfortunately, it exhibits a decided tendency to check, and a great proportion of the material collected around the outcrops was found to be badly flawed. Test pieces, after burning at 1000° C., were found to be too badly checked to be of any value for lava purposes. Whether this undesirable characteristic persists throughout the deposit is problematical. It is reasonable to expect that the material will be found to be more compact and less subject to flaws with increasing distance from the surface. Only prospecting work has been done on this property.

A small quantity of talc is reported to have been secured during 1919 near Marne, mile 92, on the Pacific Great Eastern railway. The material was shipped to Vancouver to be ground for use in surfacing roofing.

A deposit of soapstone is reported to have been worked during 1919 on Wolf creek, Vancouver island. Further particulars are lacking at the time of writing.

Production of Talc.

The production of talc in Canada in 1919 was 18,642 tons, and practically the entire output came from the Madoc district, Ontario. The bulk of the talc finds employment in the paper and toilet products industries. The following table shows the annual production of talc since 1912:—

Year.	Tons.	Value.	Year.	Tons.	Value.
1912	8,270	$23,132	1916	13,104	$49,423
1913	12,250	45,980	1917	15,803	76,539
1914	10,808	40,418	1918	18,190	112,727
1915	11,885	40,554	1919	18,642	116,295

BARYTES.

NOVA SCOTIA.

The domestic output of barytes has been chiefly derived from the province of Nova Scotia, where deposits of the mineral occur at a number of localities. In recent years, practically the entire production has been secured from the deposits on the east side of Lake Ainslie, in Inverness county, Cape Breton island. In earlier years, a small tonnage was obtained from deposits at Five Islands, in Colchester county, Brookfield, in Hants county, and Hodson, in Pictou county; the last work on any of these properties took place over twenty years ago.

Some years ago, Barytes, Ltd., erected a mill at Scottsville, to grind and concentrate Lake Ainslie barytes. A certain tonnage was put through the mill, but operations have since been suspended. At the present time, only one property is being worked—by Brandram-Henderson, Ltd.,—the ore being shipped to Halifax, where it is ground.

Certain of the Lake Ainslie veins carry a good grade of white barytes, which is stated to run as high as 96 per cent of barium sulphate. In several cases, however, where the colour is good, the ore is low in barium sulphate, as much as 35 per cent of calcite and fluorite being shown by some samples analysed. In the case of other veins, which carry ore running 90-95 per cent of barium sulphate, the barytes is off colour, having a grey or brownish tint. This coloration cannot be removed by bleaching with sulphuric acid, and, consequently, the barytes yields only a second grade, ground product.

The Lake Ainslie barytes deposits consist of a number of more or less parallel veins cutting across a high ridge that follows the east side of the lake. The vein zone extends for a distance of about 10 miles. The maximum distance for which any one vein has been traced is stated to be 4,500 feet, and the maximum width of ore body, 18 feet. The greatest depth that has been reached in exploiting the deposits is 110 feet.

QUEBEC.

In Quebec province, a barytes vein on lot 7 in range X of the township of Hull, Hull county, was worked a number of years ago and yielded a small tonnage. This is the only occurrence of barytes in the Province which has yielded any production, though small deposits occur at several points in Hull, Templeton, and Buckingham townships.

ONTARIO.

In Ontario, narrow veins of barytes have been worked in Frontenac, Lanark, and Carleton counties. None of these deposits appear to be of important extent, and the ore in many cases contains appreciable amounts of calcite or fluorite. In several cases, the veins have evidently formed on fault planes, the vein-filling consisting of brecciated fragments of the country rock cemented by barytes and calcite.

Many years ago, barytes was mined on McKellar island, Thunder bay, Lake Superior, and about 2,000 tons is reported to have been shipped.

In the last few years, important deposits of barytes have been discovered in northern Ontario. Only one of the properties has had any important development work done upon it. This is the deposit owned by Premier-Langmuir Mines, Ltd., in Langmuir township, Timiskaming. The vein on this property has a maximum width of 6 feet, and consists of massive barytes having a coarsely crystalline, spathic character. The barytes is pure white, and analyses of the milled product, made in the ore dressing laboratory of the Mines Branch, showed 91 per cent barium sulphite.

The only cleaning that this material had undergone consisted of a preliminary jigging after it had passed the crusher, in order to remove admixed country rock; slabs or wedges of which occur in the vein. The chief impurities in the ore consist of calcite (6 per cent) and quartz (2 per cent). Pyrite, chalcopyrite, zinc blende, and native silver also occur in very small amounts. The vein can be traced for over 200 feet, the greatest width being at the point of attack, where it is 6 feet wide. A drift has been carried 150 feet into the ridge in which the vein occurs, and a 60-foot shaft has been sunk at the entrance to the drift. A mill was erected on the property a couple of years ago, and some trial shipments of ground barytes have been made. Shipment is made by scow, by way of Night Hawk lake, to Connaught station, 35 miles distant.

Barytes has also been found in Lawson, Cairo, and Yarrow townships, all in Timiskaming district, but only work of a prospecting nature has so far been done on the deposits. Transportation difficulties hamper the immediate development of all these properties.

The deposit in Lawson township lies about 15 miles west of Elk lake, one mile south of the Elk Lake-Gowganda road. The vein has an average width of 10 feet and is exposed for a distance of 50 feet, being capped at both ends of the outcrop. It is composed of coarsely crystalline white barytes and carries little in the way of visible impurities, though analyses of the material are not available at the time of writing. A very small amount of chalcopyrite occurs as specks disseminated through portions of the vein. The colour of the barytes, when freshly broken, is a good white, though the surface ore, as is to be expected, exhibits a slight brownish tinge.

The deposits in Cairo and Yarrow townships were not examined, owing to the lateness of the season and difficulties experienced in reaching them. They have been described by A. G. Burrows, in the 27th Annual Report of the Ontario Bureau of Mines, 1918, Part I, p. 237. The following particulars regarding them are taken from this source.

The occurrence in Cairo township lies on the west side of Browning lake, in the north part of the township. The barytes vein has a maximum width of 15 feet and can be traced for over 130 feet. It narrows from 15 feet at the east end of the outcrop to 2 feet at the west end. The colour of the barytes is a good white. Minor impurities in the ore comprise zinc blende, galena, specularite, and fluorite. The vein also contains some large inclusions of the country rock (syenite). Analysis of a sample taken across 8 feet of the vein showed 90·5 per cent of barium sulphate.

The deposit in Yarrow township occurs on the creek connecting Yarrow and Mistinigon lakes. There are two veins, 5 feet and 6 feet wide, respectively, separated by a band of quartzite. The length of the veins was not ascertained. According to a report by M. B. R. Gordon, mining engineer for the Ontario Barium Company, which controls the deposit, one of the veins has since been found to have a width of 12 feet and has been traced for over 400 feet. Two samples from this vein yielded, on analysis, 81 and 98 per cent of barium sulphate, respectively, the balance in the case of the first sample being silica. The second vein, whose length is believed to be at least 700 feet, is stated to have a total width of 20 feet. It contains, however, a band of chert 6 feet thick which splits the vein into two parts, 7½ and 6½ feet wide, respectively. An analysis of an average sample from this vein showed 77 per cent of barium sulphate.

In the Sudbury district, a promising barytes vein has been discovered near Tionaga, in Penhorwood township. The deposit lies close to the track of the Canadian National railway. According to a report by C. H. Hitchcock, mining engineer, of Sudbury, the ore body has a length of at least 525 feet and a maximum width of 15 feet. The barytes is of a good white colour, and carries only a minute amount of impurities—chiefly chalcopyrite—in specks disseminated through the ore. The vein contains occasional inclusions of country rock, and in places fluorite occurs along the

contact with the country. An average sample of the barytes, analysed in the laboratory of the Mines Branch, showed a content of 97·5 per cent of barium sulphate, the residue being quartz. An average of six channel samples taken at various places on the vein, is stated to have shown 95·5 per cent of barium sulphate.

Production of Barytes.

The output of barytes in Canada in 1919 was smaller than that of the preceding year (640 tons) and only one mine reported production. The following table shows the annual production, 1912-1918:—

Year.	Tons.	Value.	Year.	Tons.	Value.
1912	464	$5,104	1916	1,368	$19,393
1913	641	5,410	1917	3,490	54,027
1914	612	6,169	1918	640	10,165
1915	550	6,875			

CELESTITE.

Celestite is known to occur at a number of localities in Canada, but only two of the occurrences possess probable economic significance. Both these are in Ontario, one on lot 2 in concession VIII of the township of Lansdowne, Leeds county, and the other on lot 7 in concession X of the township of Bagot, Renfrew county. Both the deposits have been known for a number of years, but very little work has been done upon them.

The deposit in Lansdowne consists of a vertical vein of celestite, 12 to 24 inches wide, enclosed in Grenville crystalline limestone. There is no sharp line of demarcation between the vein and the country rock, the ore body grading into the limestone. The celestite occurs as a rather loose aggregate of tabular crystals of a prevailing bluish colour, but brown and also colourless crystals are common. The narrowness of the vein and the rather friable nature of the enclosing limestone would render it difficult, in mining operations, to prevent the celestite becoming contaminated by calcite. An analysis of a representative sample of the celestite, conducted by the Dominion Sugar Company, Chatham, Ont., showed 99·4 per cent of strontium sulphate.

The occurrence in Bagot township presents unusual features both in the character of the celestite and the form of the deposit. The celestite is of a uniform pure white colour and occurs both as irregular masses and as interlacing stringers of radiating, fibrous or columnar crystals enclosed in a matrix of brownish ankerite. The deposit is enclosed in crystalline limestone and the ankerite probably represents a zonal alteration product of this rock. The deposit of celestite and ankerite has a surface width of about 45 feet at the point where it has been opened up. Masses of pink crystalline limestone occur included in the celestite-ankerite body and are generally surrounded by varying thicknesses of celestite. The deposit dips at an angle of about 45° S. and is capped by crystalline limestone. The celestite occurs in largest amount in the hanging wall zone. The greatest width of individual stringers is about 18 inches. According to information supplied by the present operator, a 60-foot vertical drill hole put down just south of the hanging wall met the ore body at a depth of 40 feet, and 20 feet of vein material, consisting of alternating bands of celestite and pink limestone, was then passed through. The bands of celestite ranged up to 2½ feet in thickness. At this point the 45-foot ore body is estimated to carry about 40 per cent of celestite. The deposit is stated to have been traced along the strike for over 2,000 feet.

A steam plant has recently been installed on the property and a grinding mill is being erected. It is intended to produce a finely ground celestite that may find utilization in industries at present using barytes, such as the paint and rubber trades. An analysis of the celestite, made in the laboratory of the Geological Survey, showed 85 per cent of strontium sulphate and 14 per cent of barium sulphate.

STRONTIANITE.

While strontianite has been recorded from three localities in Canada, none of the occurrences possess probable economic importance. The most extensive of the three deposits is that on lot 31 in concession A, township of Nepean, Carleton county, Ontario, but the occurrence is of mineralogical interest only. The outcrop occurs below high water mark on the shore of the Ottawa river and can only be examined at low water. The occurrence was not examined by the writer, but in Vol. VI of the Geological Survey, page 22R, it is stated to consist of two narrow veins, about 6 inches wide, traversing Chazy limestone. Vein-pieces, collected by A. T. McKinnon, of the Geological Survey, and examined by the writer, consisted largely of calcite and brecciated fragments of the limestone. Occurring irregularly in this material, and occasionally extending almost the entire width of the vein, are aggregates of radiating, fibrous strontianite crystals. The strontianite probably does not form more than 20 per cent of the vein filling. The material is of a pale, yellowish-green colour, grading into white. Associated with it is a small amount of pyrite.

An analysis of carefully selected material, made in the laboratory of the Geological Survey, showed 93·4 per cent of strontium carbonate, the residue being calcium carbonate.

FUELS AND FUEL TESTING DIVISION.

I.

WORK AT THE FUEL TESTING STATION, ETC.

B. F. Haanel, *Chief of Division.*

During the year 1919, the staff of the Fuels and Fuel Testing Division was very seriously reduced, through the resignations of Messrs. R. E. Gilmore and T. W. Hardy. Mr. Gilmore was engaged for the carrying out of special research work in connexion with the carbonization of fuels and Mr. Hardy for special work in connexion with gas analyses. These resignations, together with the leave of absence granted to Mr. Edgar Stansfield, chief engineering chemist, to take charge of the chemical work of the Lignite Utilization Board, very materially handicapped the work which it was planned to carry out during this year.

The money voted in the estimates for 1919-20, for this division, provided for important research work in connexion with fuels, namely, an investigation concerning the utilization of fuels for the production of power and general industrial purposes in Canada, with a view to ascertaining whether it is possible to substitute, in certain cases, hydro-electric power for power derived from fuel; and whether it will be possible to economize in the use of fuels by erecting central power plants and heating plants at strategic points. It was also planned to begin research work on the oil shales of Canada of a character similar to that which has been conducted on certain of the western lignites. The difficulty experienced in obtaining the necessary additional laboratory assistance, together with the above resignations, made it impossible to carry out certain of the investigations planned; although in the case of the oil shales, a very good start was made. Other resignations which are likely to take place in the very near future will affect most seriously not only the chemical staff, but also the engineering staff of this division, if the vacancies are not filled at the earliest possible moment.

The writer, in addition to the regular duties of laying out and directing the work of this division, has had a large amount of work to perform for the Peat Committee, of which he is secretary; and for the Dominion Power Board. The secretarial work of the Peat Committee is performed entirely by the writer.

The regular work of the Division of Fuels and Fuel Testing entailed the examination and analysis of samples of mine air received from the principal producing coal mines of the Dominion; chemical analyses and physical examination of oils for the different departments of the Canadian Government; together with general analysis and the determination of heating values of fuels received from outside sources, and of those required in connexion with investigations conducted in the Mines Branch generally.

The machine shop, which is under the control of this division, completed, and had under way, a very large amount of work in connexion with the construction of new apparatus, repairs to existing machines and apparatus, and the erection of apparatus in the various laboratories of the Mines Branch.

The laboratory for the special investigation of oils obtained by the distillation of coals, lignites, and oil shales, in retorts especially designed and constructed for this purpose, is now completed; but owing to inadequate staff it is impossible to conduct investigations for which the laboratory was equipped.

SESSIONAL PAPER No. 26a

The research work which has been under way concerning the carbonization of lignites, with a view to determining their proper treatment for briquetting, and the quantity and value of the oils recovered in their carbonization, is now nearing completion.

Mr. John Blizard, technical engineer, was engaged in investigating powdered fuel plants of the United States and Canada, with a view to collecting data and information for the preparation of the report which it is hoped to have ready for the press early in the following year.

Mr. E. S. Malloch was engaged during part of the summer on an investigation concerning the feasibility of erecting a central power plant in the vicinity of Estevan, for the generation and distribution of electric energy from that point to Moosejaw, Regina, and intervening points along the proposed transmission line. The Mines Branch was asked to make a report on this proposed scheme for the Dominion Power Board, which board, in turn, had been asked by the Saskatchewan Government for their opinion regarding the feasibility of such a scheme. The report bearing on this subject was prepared by the writer for the Dominion Power Board.

In addition to field work performed by Mr. Malloch he had charge of the calibration of electro-thermo couples.

Since many inquiries have come to this office concerning the activities of the Peat Committee, the report of that committee for the year ending December 31, 1919, is included for general information.

The summary report of Mr. Edgar Stansfield, and of Mr. A. W. Mantle, will show in detail the work carried out under their immediate direction. The memorandum regarding the southern Saskatchewan Power Scheme, which was submitted to the Dominion Power Board, follows as an appendix.

II.

CHEMICAL LABORATORIES OF THE FUEL TESTING STATION.

EDGAR STANSFIELD, *Chief Engineering Chemist.*

The work of these laboratories was carried out under difficulty during the year. No steps have yet been taken to remedy the unsatisfactory laboratory accommodation referred to in previous reports; and the personnel was insufficient for the work in hand. The writer's time was mainly occupied by his duties with the Lignite Utilization Board; T. W. Hardy and R. E. Gilmore left at the end of June and October, respectively, to take more lucrative positions with commercial firms; and although two special positions were advertised for research chemists to work on oil shale, only one of these was filled, A. A. Swinnerton commencing work on May 18. There were thus three vacant positions on the staff at the end of the year.

R. E. Gilmore was engaged, until he left, on the continuation of his previous researches on lignite; J. H. H. Nicolls was in charge of work on coal and other solid fuels; T. W. Hardy, until he left, was in charge of gas analyses; R. C. Cantelo was in charge of oil analyses; and J. Moran in charge of mine air analyses. A. A. Swinnerton worked on gas analyses and on an investigation of oil shales.

The equipment has been increased by the purchase of the following special apparatus: a Redwood viscosimeter, admiralty pattern, for fuel oil; a wall pyrometer; a pulp balance; and a gas generator. In addition, a number of furnaces and retorts

were constructed on the premises; also several new mercury winches, with quick and slow motion, for gas analysis; a ball and ring melting point apparatus; and many new parts for existing apparatus.

The number of samples submitted for examination during the year from outside sources showed a marked drop from previous years. This allowed more progress to be made with the investigations mentioned below than would otherwise have been possible with the depleted staff. The samples received include: 291 mine air; 79 oil shale; 76 coal; 15 oil; 2 peat; and 22 miscellaneous samples. Of the above samples 291 were analysed in connexion with coal and other mine inspection by the Provincial Governments; 84 for the Geological Survey; 18 for the Department of the Interior: 15 in connexion with the regular work of the Fuel Testing Station; 9 for other divisions of the Mines Branch; 7 for the Department of Militia and Defence; 4 for the Department of Marine and Fisheries; 4 for the Board of Railway Commissioners; 2 for the Department of Public Works; 1 for the Department of Naval Service; 1 for the Lignite Utilization Board; 1 for a Provincial Government Department; 1 "official" coal mine sample from Alberta; and 47 for outside parties. No count is made of the very large number of samples tested in connexion with the special investigations in progress in the laboratories. Two hundred and forty-eight of the mine air samples came from British Columbia, 36 from Alberta, and 7 from Nova Scotia; the samples coming from 55 mines operated by 38 different operators.

A considerable advance was made during the year with the investigation on lignite which has been in active progress since early in 1917. This work was carried out during 1919, in close co-operation with the Lignite Utilization Board of Canada. The Board supplemented the accommodation and equipment available: erecting a semi-commercial carbonizer, and building and equipping a small briquetting plant.

The semi-commercial carbonizer referred to above, was a logical development from the information gained in the investigations on lignite carbonization during the two preceding years. The working drawings were prepared by R. de L. French, the engineer to the board. Experience gained in the operation of this carbonizer during the summer and autumn led to repeated modification and improvement, and the final pattern worked so satisfactorily that it has been taken as the basis for the design of the carbonizers to be erected for the plant of the Board near Bienfait, Sask., in 1920.

Good progress has also been made with work on the briquetting of carbonized lignite, first, with a small hydraulic press, and later with a commercial roll press. Many binders have been experimented with, both singly and in combinations.

Some further progress has been made with the laboratory scale investigation on carbonization, and results supplementary to those published in the 1918 report are included in an appendix herewith. This work, however, was suspended for the greater part of the year in favour of the semi-commercial experiments.

R. C. Cantelo completed the investigation commenced at the end of 1918 on samples of wash oils, before and after their use for the extraction of gasoline, in connexion with an investigation on the gasoline content of Canadian natural gases by D. B. Dowling of the Geological Survey; he also carried out some tests on the spontaneous ignition of gasoline.

Another investigation carried out by R. C. Cantelo was with regard to the so-called "Colloidal Fuel." He investigated the value of a number of colloid stabilizers, and showed that carbonized lignite could be employed to make colloidal fuel.

An investigation of the value of a number of Alberta coals for smithy purposes was carried out by J. H. H. Nicolls. It was found that certain coals from the Crowsnest Pass and Mountain Park areas compared favourably with commercial samples of imported blacksmith coals.

A commencement was made with an investigation of oil shale. This was planned to include two main divisions of work; first, a systematic study of the retorting of

oil shales, in order to obtain the accurate data essential for the scientific design and control of a commercial retorting plant; second, a complete examination of samples from all the known deposits of the Dominion. It was proposed to employ two chemists continuously on this work, with assistance as required in their special lines from three members of the permanent staff. For reasons already indicated, A. A. Swinnerton has worked alone, and progress has been correspondingly slow. A partial examination of 79 samples, principally from New Brunswick, has been made; and progress can be reported on the determination of the best method for the retorting of samples.

The following results were obtained with a sample of shale from Albert mines, New Brunswick, collected by W. J. Wright of the Geological Survey. The apparatus and methods employed are essentially those described on pages 99-101 of the Summary Report for 1918. Instead of the tubular retort shown a retort of + section was employed with a charge of 3,500 grams; also the steam-jacketed condenser D was omitted from the condensing train. The following tables have been compiled from single experiments only, and are subject to revision.

TABLE I.

Oil Shale Distillation, Summary of Results.

Test.	Temperature.	Crude Oil.	Gas.	Residue.	Unaccounted for.
Series I–Rapid heating.	Degrees C	%	%	%	%
1	350	1·7	neg.	98·0	0·3
2	400	8·1	neg.	89·6	2·3
3	410–450	12·3	1·9	84·4	1·4
4	460–500	11·0	3·0	82·6	3·4
5	450–510	11·7	2·2	83·6	2·5
6	550	12·0	4·1	78·0	5·9
Series II–Slow heating.					
7	350–550	13·4	3·5	82·8	0·3
8 with steam	350–550	12·3	3·3	83·4	1·0
9 vacuum	350–500	13·8	3·1*	81·1	2·0

*Includes some air which leaked in.

TABLE II.

Oil Shale Distillation—Oil Yield.

Test.	Temperature.	Crude Oil.			Dry Oil.		
		Yield, Imp. gals. per 2,000 lbs.	Sp. Grav.	Water by weight.	Yield, Imp. gals. per 2,000 lbs.	Cal. Val. cals. per gram.	Distilling below 180°C, by weight.
Series I–Rapid heating.	Degrees C.			%			%
1	350	4·0	0·856	40·0	2·6	10,000	–
2	400	19·9	0·822	1·6	19·6	10,260	–
3	410–450	28·6	0·861	4·7	27·4	10,250	11·0
4	460–500	25·0	0·881	1·5	24·7	10,310	8·5
5	450–510	26·7	0·877	0·4	26·6	10,215	10·8
6	550	28·0	0·857	1·8	27·6	10,210	16·5
Series II.–Slowheating.							
7	350–550	31·5	0·852	7·0+	29·6–	10,500+	*
8 with steam	350–550	28·5	0·862	0·8	28·3	10,280	18·8
9 vacuum	350–500	32·0	0·888	4·8	30·7	10,750	7·3

*Flask cracked during distillation, some water possibly left in the oil.

TABLE III.

Oil Shale Distillation—Nitrogen Distribution.

Test.	Temperature.	In residue.	Percentage of total nitrogen content.		
			In residue.	As ammonia in distillate.	In gas and unaccounted for.
Original shale.	Degrees C.	% 0·83	% 100	% –	% –
1	350	0·85	100	–	–
2	400	0·82	88	½	11½
3	410–450	0·72	74	½	25½
4	460–500	0·70	70	1	29
5	450–510	0·66	66	2	32
6	550	0·69	65	4	31
7 slow heating	350–550	0·63	63	1	36
8 with steam	350–550	0·71	71	1	28
9 vacuum	350–500	0·71	70	–	–

III.

LIGNITE CARBONIZATION.

EDGAR STANSFIELD, ROSS E. GILMORE, J. H. H. NICOLLS, T. W. HARDY, and others.

The results given in the following tables and diagrams form part of, or are a continuation of, the work described in the Summary Report for 1918. The methods and apparatus employed are those already described.

Comparative tests of carbonization of Saskatchewan and Alberta lignites, described on p. 94 ibid, and illustrated in Diagrams III and VI of the same report, have been continued. Diagrams I and II, herewith, show results obtained with lignite from the Great West Coal Co.'s Black Diamond mine, Clover Bar, Alberta; and from the Tofield Coal Co., Tofield, Alberta. Table I shows, in tabular form for comparison, some of the results obtained with the two Saskatchewan and four Alberta lignites tested in this series.

Table II is an enlargement, with some minor changes, of Table XI in the above-mentioned report. The full analysis of the gas produced by rapid heating of moist lignite to different temperatures is given in this table, also certain combustion data of value in calculations for furnace and flue design.

Table XII of the 1918 report gives results on carbonization of different lignites from the Estevan area, computed to a basis of coals containing 33 per cent water and 7 per cent ash. Tables III-V below give some of the original data from which the former table was computed. Table III gives analyses of the charge and residue in some of the tests. It is interesting to note that the determined volatile matter in the residue is, with one exception, lower than would be expected from the analysis of the charge and the loss in weight on carbonization; the ash is in every case lower than would be expected, and the fixed carbon is consequently higher. The discrepancy in volatile matter may to a slight extent be due to decomposition of volatile matter in the retort with the production of fixed carbon. It is probable, however, that both this

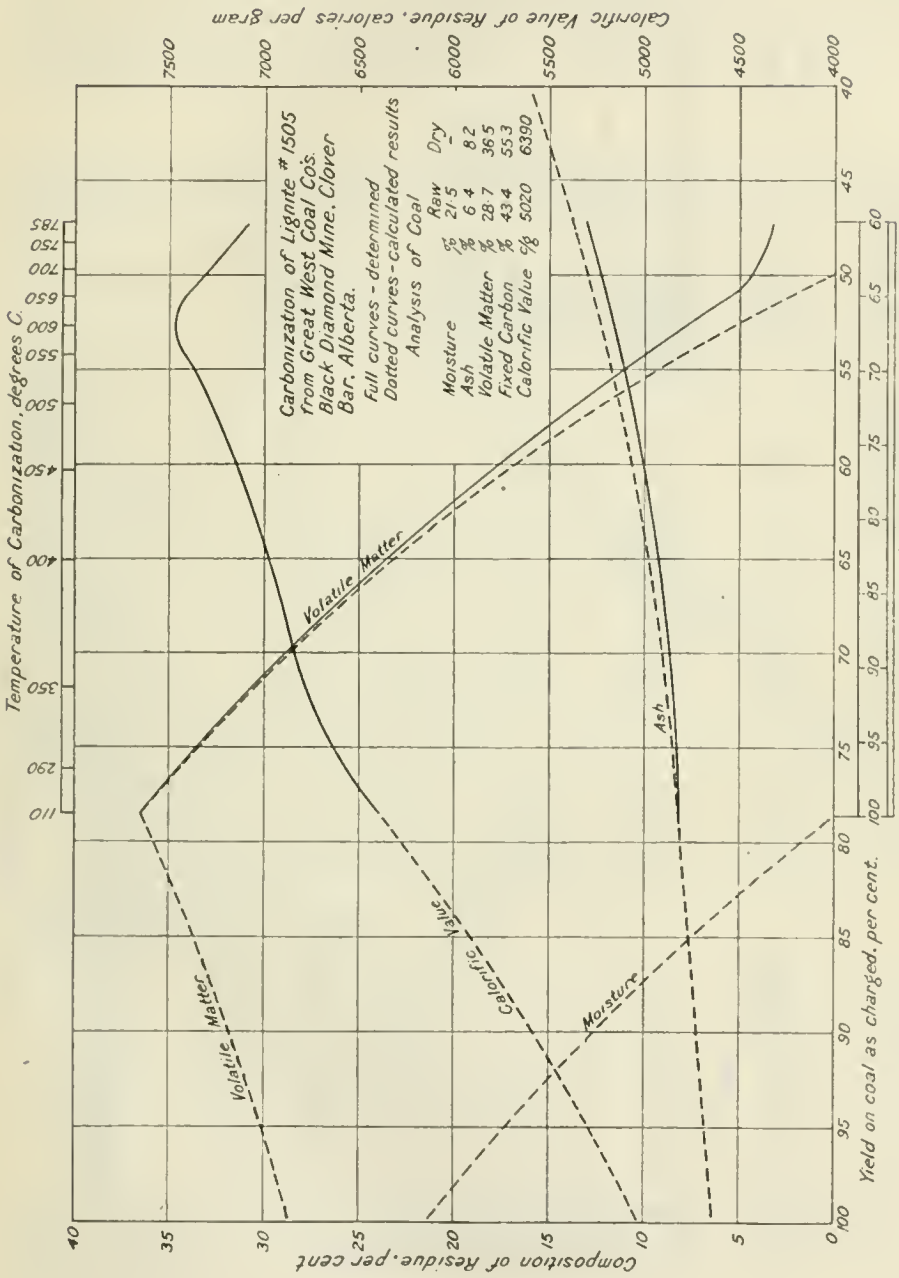

Diagram I. Carbonization of lignite No. 1505 from Great West Coal Co.'s Black Diamond mine.

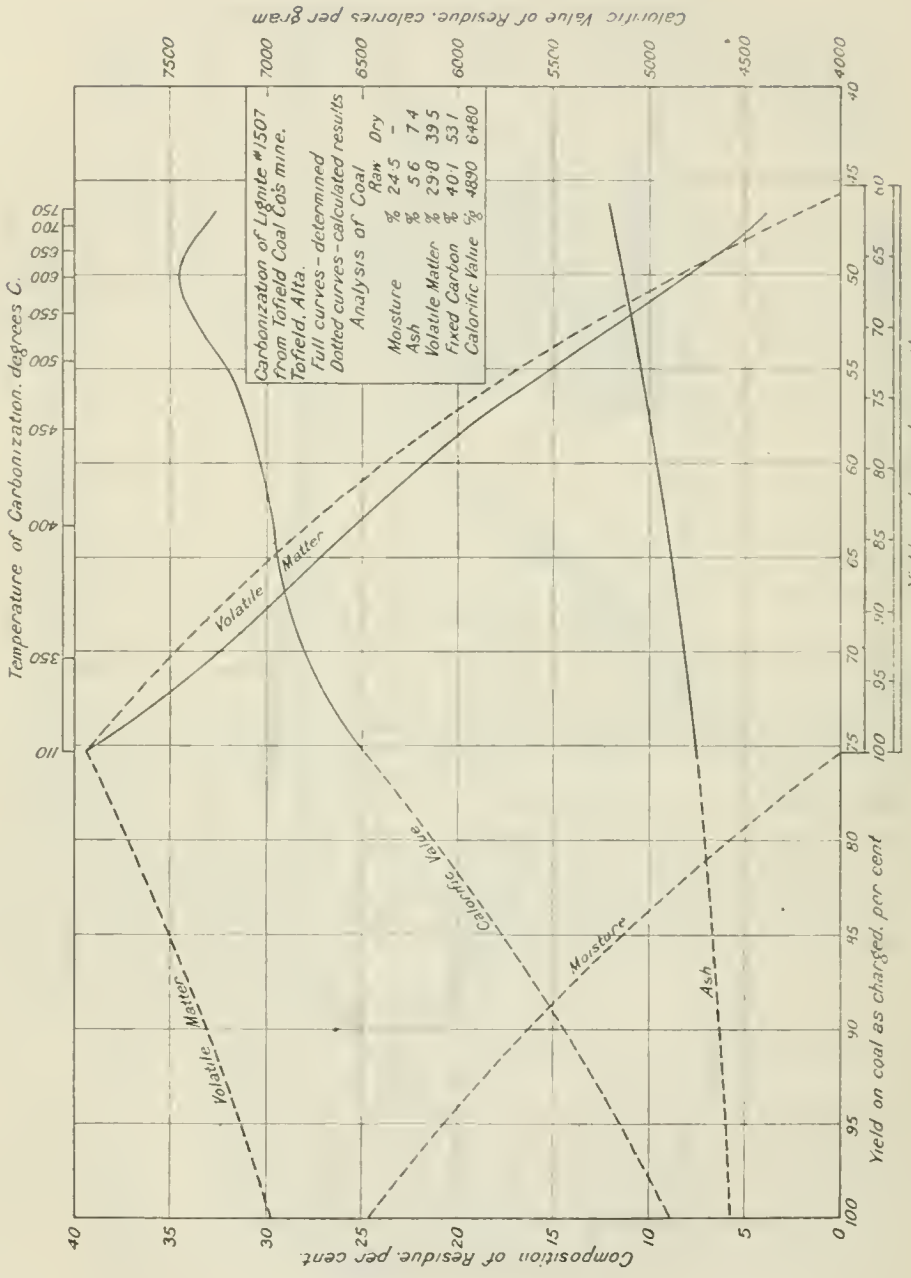
Carbonization of Lignite #1507 from Tofield Coal Co's mine. Tofield, Alta.
Full curves - determined
Dotted curves - calculated results
Analysis of Coal
Raw Dry
Moisture % 24.5 -
Ash % 5.6 7.4
Volatile Matter % 29.8 39.5
Fixed Carbon % 40.1 53.1
Calorific Value % 4890 6480
Temperature of Carbonization. degrees C.
Calorific Value of Residue. calories per gram
Composition of Residue. per cent.
Yield on coal as charged. per cent
Yield on dry coal. per cent
Volatile Matter
Volatile Matter
Calorific
Moisture
Ash

Diagram 11. Carbonization of lignite No. 1507 from Tofield Coal Co.'s mine.

difference and the ash difference are in some way due to factors which are inevitably involved in the standard methods of "proximate analysis," rather than to loss of volatile matter or ash. The discrepancies here shown are typical both in sign and amount of those found in nearly all similar experiments on lignite in these laboratories. Table IV gives distillation results on the tars obtained from three of the lignites tested. Table V gives yields, analyses, and combustion data for the gases obtained in these tests.

TABLE I.

Comparison of Results of Carbonization of Saskatchewan and Alberta Lignites.

Source of Lignite.	Saskatchewan.		Alberta.			
	Saskatchewan Coal, Brick and Power Co., Shand.	Western Dominion Collieries, Taylorton.	Halbert's mine, Trochu.	Cardiff Collieries, Cardiff.	Black Diamond mine, Great West Coal Co., Clover Bar.	Tofield Coal Co., Tofield.
Raw lignite—						
Moisture %	31·8	31·3	17·3	23·6	21·5	24·5
Ash. %	5·2	8·0	8·4	7·6	6·4	5·6
Volatile matter %	28·9	28·0	27·2	29·6	28·7	29·8
Fixed carbon %	34·1	32·7	47·1	39·2	43·4	40·1
Calorific value—						
Cals. per gram	4260	4160	5320	4660	5020	4890
B.Th.U. per lb	7670	7490	9570	8390	9040	8810
Dry lignite—						
Ash %	7·6	11·6	10·1	10·0	8·2	7·4
Volatile matter %	42·3	40·8	33·0	38·7	36·5	39·5
Fixed carbon %	50·1	47·6	56·9	51·3	55·3	53·1
Calorific value—						
Cals. per gram	6260	6050	6430	6100	6390	6480
B.Th.U. per lb	11270	10890	11580	10980	11510	11670
Carbonized lignite at temp. of max. C.V.—						
Ash %	11·6	16·7	13·8	14·5	11·6	11·3
Volatile matter %	–	9·2	7·8	7·5	7·9	7·9
Fixed carbon %	–	74·1	78·4	78·0	80·5	80·8
Calorific value—						
Cals. per gram	7530	7030	7170	7130	7470	7460
B.Th.U. per lb.	13560	12650	12900	12840	13450	13430
Gain in Calorific Value on Carbonization, at specific Temperatures. Dry coal basis.						
350°C %	10·5	7·8	3·7	7·6	6·4	4·5
400°C %	13·6	9·9	4·7	9·8	9·5	7·4
450°C %	16·3	10·8	6·5	11·6	11·9	9·3
500°C %	18·8	13·7	8·6	14·4	13·8	11·6
550°C %	20·3	16·2	10·0	16·1	16·1	14·0
575°C %	20·2	16·0	10·9	16·6	16·7	14·7
600°C %	20·1	15·5	11·4	16·9	16·9	15·0
625°C %	19·8	14·7	11·5	16·9	16·7	14·8
650°C %	19·3	13·6	11·4	16·7	16·2	14·5
700°C %	18·0	12·5	10·7	16·1	13·9	12·8
750°C %	17·1	11·2	9·6	14·1	12·4	12·0
800°C %	16·1	–	8·4	13·2	10·3	–
Maximum increase of C.V.—	%	%	%	%	%	%
From raw coal %	76·8	69·0	34·8	53·0	48·8	52·4
From dry coal %	20·3	16·0	11·5	16·9	16·9	15·0
Yield for maximum C.V.—	%	%	%	%	%	%
From raw coal %	46	46	58	51	53	50
From dry coal %	67	67	71	67	67	67

TABLE II.

Gas Results, Lignite Carbonization, Rapid Heating, Shand Lignite Charged Moist.

Temperature °C	350	400	475	555	605	690	750–800
Temperature °F	660	750	885	1030	1120	1275	1380–1475
Moisture in charge %	32·3	31·9	30·9	32·3	31·2	33·0	33·7
Yield per 2.000 lbs.—							
As charged	590	1190	2080	3050	3810	4900	5540
Dry basis	870	1740	3010	4510	5530	7320	8340
Yield per lb. residue cu. ft	0·5	1·1	2·1	3·4	4·3	5·9	6·9
Analysis of gas—							
Carbon dioxide %	60·3	63·0	44·9	41·5	36·1	30·3	25·0
Ethylene, etc %	1·6	2·1	3·0	1·9	2·1	1·9	1·0
Oxygen %	2·1	1·4	1·5	0·7	0·7	0·5	0·9
Carbon monoxide %	8·7	9·3	8·5	9·3	10·8	12·3	11·4
Methane %	10·9	14·1	24·9	27·1	26·6	25·8	20·0
Hydrogen %	6·4	3·2	9·7	16·4	21·0	27·2	36·1
Nitrogen %	10·0	6·9	7·5	3·1	2·7	2·0	5·6
Calorific value (calculated)—							
Gross, B.Th.U. per cu. ft	180	215	355	385	405	415	370
Net B.Th.U. per cu. ft	170	195	320	345	365	375	330
Density (calculated)	1·22	1·24	0·96	0·94	0·86	0·79	0·69
Combustion data—							
Air required vols	1·53	1·88	3·17	3·44	3·57	3·66	3·15
Flue gas* vols	2·45	2·82	4·09	4·31	4·41	4·46	3·91
Water in flue gas %	12·8	12·6	16·0	17·3	17·8	18·5	20·0
Dry flue gas vols	2·14	2·47	3·43	3·57	3·63	3·63	3·13
CO_2 in flue gas %	38·8	36·7	24·6	22·9	21·4	19·9	18·7

Note.—*Water assumed to be present as a gas. The dry flue gas is with water condensed.

Gas yields and calorific values are in terms of cubic feet of moist gas measured at 60° F. and under a pressure of 30″ of mercury. Gas densities and combustion data are for dry gas and dry air, unless otherwise stated.

TABLE III.

Analyses of Charge and Residue, Estevan Area Lignites, Carbonization Tests at 575-600° C.

Source of Sample.	Shand Mine.		Western Dominion Mine.		Bienfait Mine.		Estevan Coal and Brick Co.		Manitoba and Saskatchewan.	
Test No.	141		144		146		148		149	
Analysis of charge	As charged.	Dry.	As charged.	Dry.	As charged.	Dry.	As charged.	Dry.	As charged.	Dry.
Water %	34·4	0·0	34·1	0·0	18·5	0·0	31·7	0·0	31·2	0·0
Volatile matter %	26·0	39·7	28·2	42·8	35·8	43·9	26·3	40·3	28·0	40·7
Fixed carbon %	28·1	42·8	31·1	47·2	38·3	47·0	29·7	45·5	31·4	47·1
Ash %	11·5	17·5	6·6	10·0	7·4	9·1	9·3	14·2	8·4	12·2
Fuel ratio	1·08	1·08	1·10	1·10	1·07	1·07	1·13	1·13	1·16	1·16
Calorific value—										
Cals. per gram	3600	5480	4040	6130	4750	5830	3690	5650	3990	5790
B. Th. U. per lb.	6470	9870	7270	11030	8540	10500	6640	10170	7180	10420
Yield of carbonized residue %	45·3	69·1	42·8	65·0	52·2	64·1	43·6	66·8	45·0	65·4
Gain in calorific value on carbonization %	75·2	15·1	76·2	16·2	52·6	24·3	80·4	17·9	69·6	16·9
Analysis of residue—	calc.	obt. diff.	calc.	obt. diff.	calc.	obt. diff.	calc.	obt. diff.	calc.	obt. diff.
Volatile matter %	12·6	8·7−3·9	11·9	9·1−2·8	12·5	9·7−2·8	10·6	9·3−1·3	9·3	9·9+0·6
Fixed carbon %	62·0	67·0+5·0	72·7	76·6+3·9	73·4	78·0+4·6	68·1	70·5+2·4	72·0	73·4+1·4
Ash %	25·4	24·3−1·1	15·4	14·3−1·1	14·1	12·3−1·8	21·3	20·2−1·1	18·7	16·7−2·0
Calorific value—										
Cals. per gram	6310		7120		7250		6660		6770	
B. Th. U. per lb.	11360		12820		13050		11990		12190	

TABLE IV.

Distillation Results on Lignite Tar from Carbonization of Estevan Area Lignites at 575-600° C.

Source of Lignite.		Shand mine	Western Dominion mine.	Bienfait mine.
Test Nos.		141–2	143–4	145–6
Water in crude tar	%	4·1	4·2	4·4
Results on dry tar basis—				
Up to 170°C.	%	8·2	3·8	4·7
170°–200°	%	4·5	4·9	3·8
200°–270°	%	28·3	23·9	23·4
270°–310°	%	19·3	20·4	20·9
Residue	%	36·5	45·1	45·3
Gas and loss	%	3·2	1·9	1·9

TABLE V.

Gas Results, Lignite Carbonization.

Comparative Series—Estevan Area.

Source of Lignite.	Western Dominion mine, Taylorton.		Manitoba and Saskatchewan, Taylorton.	Bienfait mine.		Shand mine.		Estevan Coal and Brick Co.	
Sample No.	1075	1076	1082	1077	1078	982A	1081	1079†	1080
Experiment Nos.	143–4	153	149–150	152	145–146	154	141–2	151	147–8
Temperature, °C.	575	575+	575+	575+	575	575	575	575	575
Yield per 2,000 lbs. as charged, c.f.	3160	3420	3335	4205	4000	3310	2965	3145	3020
Dry basis c.f.	4775	5075	4875	5275	4935	4940	4505	4770	4640
Yield per lb. of residue, c.f.	3·69	3·91	3·73	4·04	3·83	3·77	3·28	3·73	3·48
Analysis of gas—									
Carbon dioxide %	40·6	39·5	40·0	44·2	44·7	39·5	40·0	55·2	42·7
Ethylene, etc %	2·6	2·5	2·5	1·8	2·0	2·4	2·3	1·9	2·3
Oxygen %	0·4	0·3	0·3	0·3	0·4	0·2	0·4	0·3	0·3
Carbon monoxide %	9·3	9·7	9·4	11·0	10·5	9·9	8·8	9·5	10·1
Methane %	29·1	28·6	28·0	26·7	27·4	28·3	29·2	20·4	26·7
Hydrogen %	15·4	17·9	18·3	15·0	12·9	18·5	16·7	10·9	15·8
Nitrogen %	2·6	1·5	1·5	1·0	2·1	1·2	2·6	1·8	2·1
Calorific value (calculated)—									
Gross, B. Th. U. per c.f.	410	415	410	380	380	415	410	300	385
Net B. Th. U. per c.f.	370	375	370	340	345	370	370	270	350
Density (calculated)	0·94	0·91	0·91	0·97	1·00	0·91	0·92	1·09	1·00
Combustion data—									
Air required vols	3·73	3·74	3·69	3·42	3·45	3·72	3·72	2·70	3·49
Flue gas* vols	4·61	4·61	4·58	4·30	4·34	4·59	4·59	4·62	4·36
Water in flue gas %	17·1	17·4	17·8	16·7	17·0	17·4	17·4	15·9	16·9
Dry flue gas vols.	3·82	3·81	3·76	3·58	3·61	3·79	3·79	3·04	3·62
CO_2 in flue gas %	22·0	21·7	21·9	23·9	24·0	21·7	21·8	29·2	23·2

NOTE.—*Water assumed to be present as a gas. The dry flue gas is with water condensed.

†Outcrop sample.

Gas yields and calorific values are in terms of cubic feet of moist gas measured at 60° F. and under a pressure of 30″ of mercury. Gas densities and combustion data are for dry gas and dry air, unless otherwise stated.

Rapid Carbonization of Lignite.—Diagrams I and III-VI in the 1918 report, and diagrams I and II above, show that the maximum calorific value of the residue is obtained by carbonization at a temperature of about 600° C. It is clear from the shape of these curves that if lignite is heated in a retort under the conditions usually met in commercial operations, with the layers near the wall very distinctly hotter than those in the centre of the charge, no regulation of the average temperature of the mass will give a residue with the maximum attainable calorific value. The amount the calorific value of the residue falls below the optimum will increase with the thickness of the charge and with the temperature gradient from the walls to the centre.

Some preliminary experiments were carried out to test the possibility of obtaining the equivalent of carbonization at say 600° C. by short exposure in a thin layer to a distinctly higher temperature. The method employed was as follows: samples of dried Shand lignite, crushed to pass a 10-mesh screen, were carbonized for a definite number of minutes in a metal box in a muffle furnace electrically heated to temperatures of 750°-800° C. The boxes were 6 inches by 3 inches by 1 inch inside, of No. 18 gauge sheet iron, with loosely fitting rim lids of the same metal. When making a test the muffle was brought up to heat, and the lid of the box was also heated. A charge to half fill, or to quite fill the box was weighed out and placed in the cold box; the heated cover was then put on, the box immediately placed on the floor of the muffle, and the muffle door closed. At the expiration of the desired time the box with its contents was removed from the muffle, cooled as rapidly as possible and the residue weighed and analysed.

No great accuracy is claimed for the results, which are shown graphically in diagram III. It is obvious that the number of experiments should have been considerably increased to render the curves reliable. They do, however, show that the results of such rapid carbonization follow the lines which theory indicates, but the advantage to be gained by further experiments was not thought to be commensurate with the work involved.

Table VI compares the results obtained by complete carbonization of the same lignite at 590°C. and 600°C. with the optimum results for ½" and 1" layers carbonized in a muffle at 800°C. as taken from the rounded curves of diagram III.

TABLE VI.

Method of carbonization.	In lead bath.		In muffle.	
	at 590°C.	at 600°C.	at 800°C.	at 800°C.
Thickness of layer.	–	–	½"	1"
Time of carbonization	Until completed.	Until completed.	5 minutes.	9 minutes.
Yield	67·5	67·1	69·2	67·0
Ash	18·9	18·9	18·7	19·4
Volatile matter	8·7	8·4	9·0	7·9
Fixed carbon	72·4	72·7	72·3	72·7
Calorific value, calories per gram	6760	6750	6690	6590

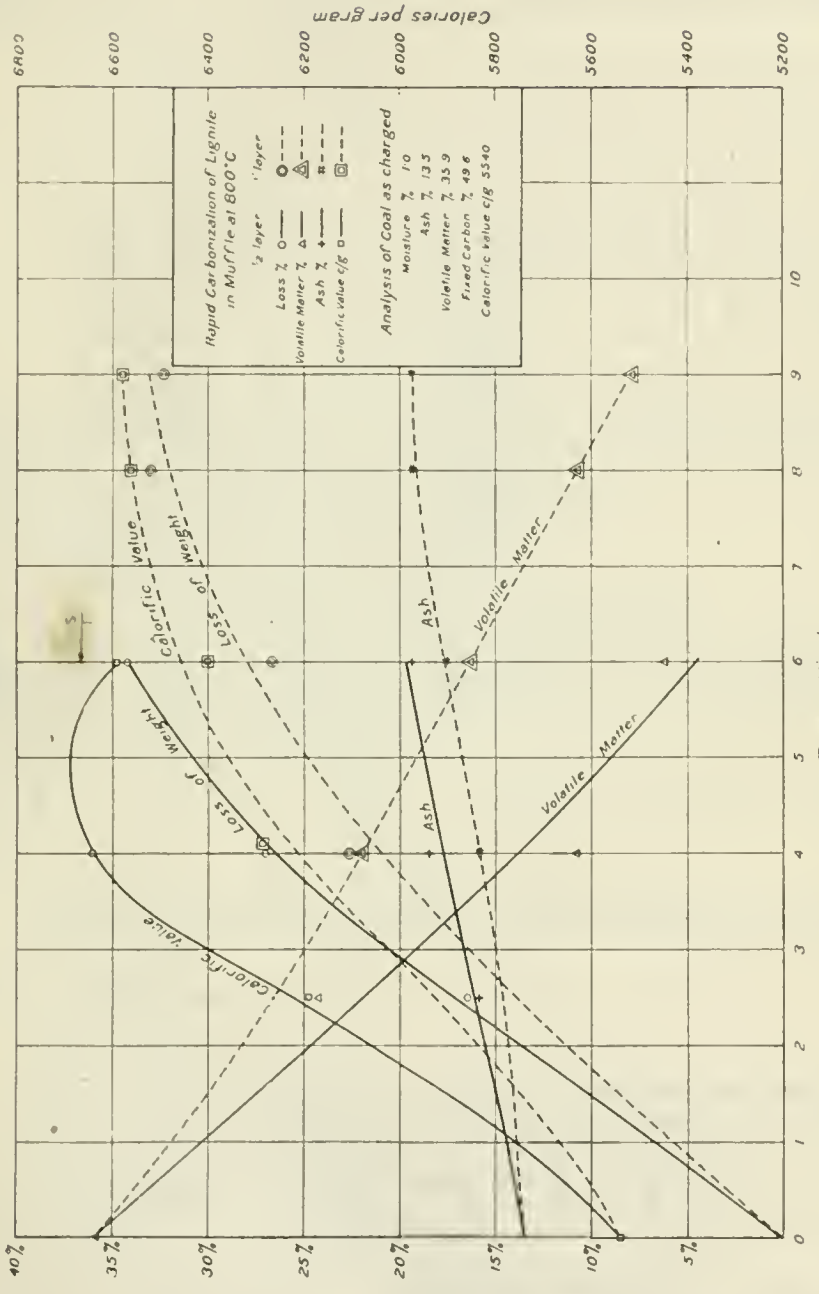

Diagram III. Rapid carbonization of lignites in muffle at 800 C.

Water in Lignite.—Diagram IV shows the results of a preliminary experiment carried out to determine the relation between the quantity and the vapour pressure of the water in a sample of lignite. A slow current of dry air was aspirated through a bottle containing crushed and screened coal from Pembina, Alta. The temperature

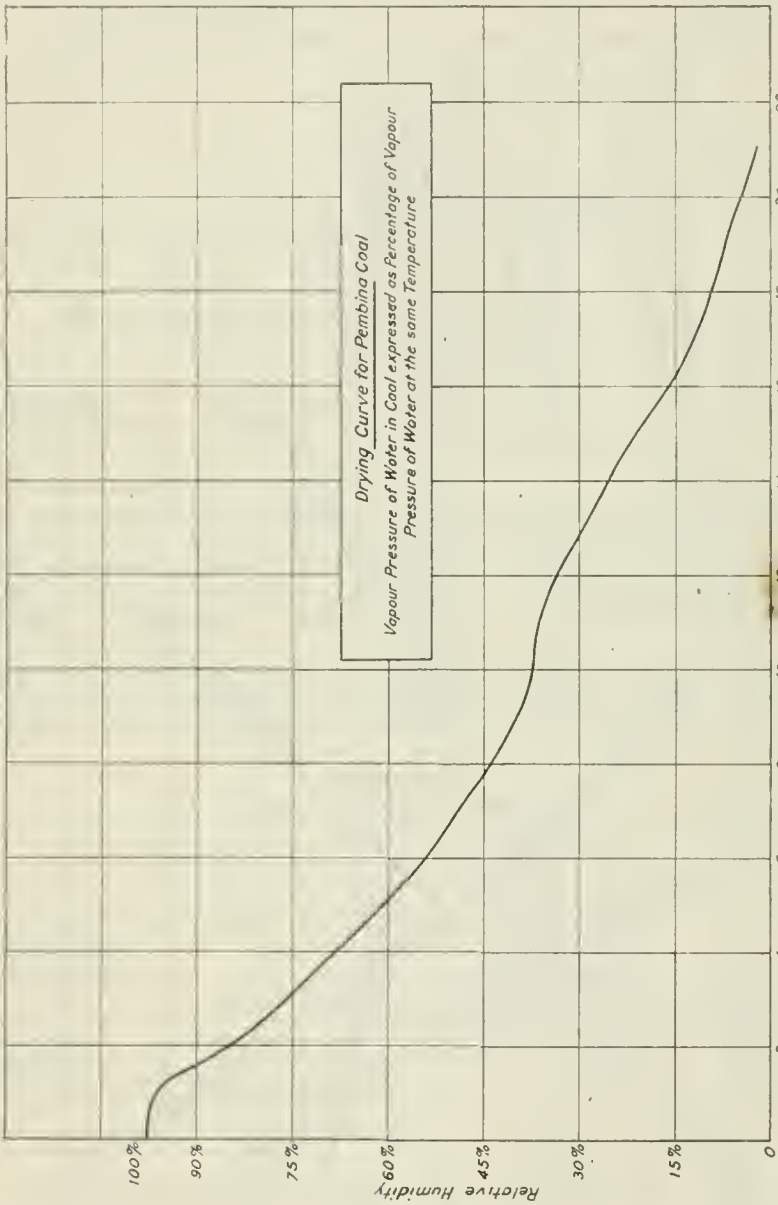

Diagram IV. Drying curve for Pembina coal.

of the coal, the volume of air aspirated, and the weight of water removed, were recorded at frequent intervals. No attempt was made to keep the coal at a uniform temperature, but in order to minimize the effect of the change of temperature the vapour pressure of the moisture in the coal was expressed as a percentage of the

vapour pressure of water at the same temperature. This relative humidity is shown plotted against the weight of water given up per 100 parts of the original coal. It was found that the relative humidity tends to increase with increase of temperature. The slow drying of the coal took four years, over 2,000 cubic feet of air being aspirated through the kilogram of coal taken.

The results obtained are complicated by slow oxidation of the coal, as well as by temperature changes; the results, however, indicate that the vapour pressure of water in lignite steadily decreases from 100 per cent relative humidity as the lignite dries.

Diagram V shows the loss and gain of moisture by Estevan area (Souris) lignite exposed moist and dry in air of 60 per cent humidity. Samples of about 4 grams in weight of raw and of dried lignites, crushed to pass a 10-mesh screen, were exposed on watch glasses of 2 inches diameter in a desiccator containing a solution of calcium chloride of 1·30 specific gravity. The watch glasses and contents were weighed from time to time, and the respective losses and gains recorded. The above solution of calcium chloride at ordinary temperatures has a vapour pressure approximately 60 per cent of that of pure water at the same temperature.

The curves indicate that equilibrium would be reached with from 14 to 16 per cent of moisture in the different samples. Varying the humidity of the air would give a different equilibrium point, as illustrated, though on a higher grade of lignite, in diagram IV. Varying the size of particles, quantity exposed, thickness of layer, circulation of air, etc., would all cause a variation in the rate of loss or gain of moisture, but should not materially affect the final equilibrium.

The samples tested were as follows:—

No. 1425—Wooloomooloo mine, Estevan.

No. 1441—Saskatchewan Coal Co's. mine, Roche Percée.

No. 1444—Interprovincial Coal Co's. mine, Roche Percée.

Carbonization tests have been carried out under pressure, in an atmosphere of steam, and at temperatures higher than previously reported, but the results are not yet ready for publication. The same is true with regard to the tests with the semi-commercial carbonizer previously referred to.

IV.

REPORT OF MECHANICAL WORK AT FUEL-TESTING STATION.

The Chief Engineer,
Fuels and Fuel Testing Division,
Mines Branch,
Sussex Street, Ottawa.

Dear Sir,—I submit herewith Summary Report for the fiscal year ending March 31, 1920, of the Mechanical Division of the Mines Branch, Department of Mines.

Experimental machines and apparatus not completed at the close of the previous fiscal year were finished and installed during the past fiscal year.

The mechanical staff was kept busy on work in connexion with the activities of the Lignite Utilization Board, and on the usual routine work necessary for the maintenance of the department's apparatus and mechanical equipment.

Respectfully submitted,

(Signed) A. W. MANTLE,
Mechanical Superintendent.

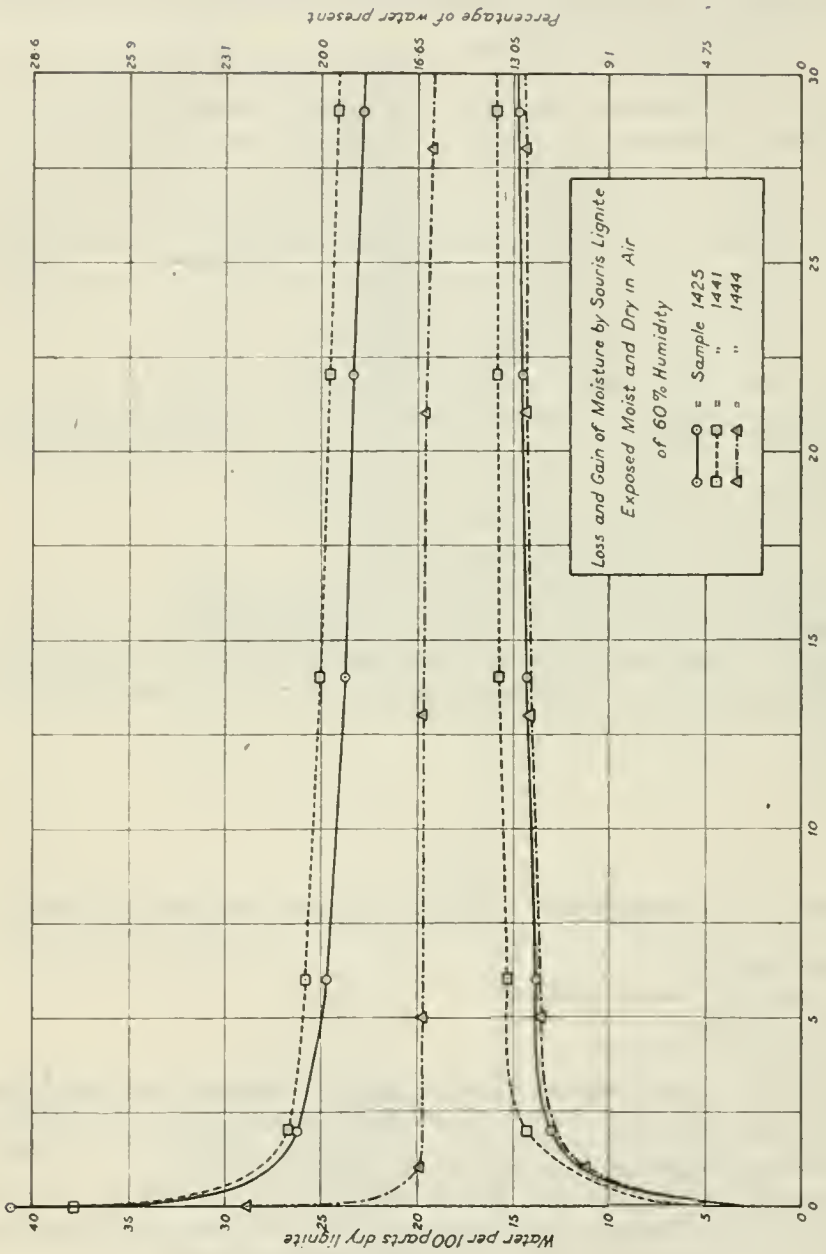

Diagram V. Loss and gain of moisture by Souris lignite.

SESSIONAL PAPER No. 26a

SUMMARY COST STATEMENT OF LABOUR COMPLETED, AND MATERIAL USED, DURING THE FISCAL YEAR ENDING MARCH 31, 1920.

Division.	Time.	Material.
Ore Dressing Division	$2,379 66	$ 166 70
Fuel Testing Division	1,112 77	164 88
Chemistry Division	679 15	126 51
General Mines Branch	542 32	127 82
Non-metals Division	162 09	11 75
Ceramic Division	70 44	45 84
Structural Materials Division	140 31	9 50
Lignite Board	575 36	72 39
Totals	$6,662 10	$1,025 39

V.

REPORT OF THE PEAT COMMITTEE FOR THE YEAR ENDING DECEMBER 31, 1919.

By B. F. Haanel, *Secretary to the Committee.*

Introductory.

When the Peat Committee was first appointed in the early spring of 1918, it was confidently expected that a mechanical demonstration of the two different types of peat machines, which the committee had given its engineer instructions to design, would be completed during the working season of that year. A short time, however, after the contract for the construction of these machines had been awarded, it became apparent that in all probability the machines would not be completed in time to try them out before winter set in. The reasons for the delays in the shop—which prevented their delivery at the time specified—were fully set forth in the first report of the Peat Committee for the year ending December 31, 1918.

The season of 1919 was consequently begun with one plant (No. 2), which was of an altogether new and novel design, partly erected on the grading of the old Alfred railway siding; and the other plant (No. 1), loaded on cars held on the main line of the C.P.R.

Mechanical Try-out of, and Alterations to the Two Types of Peat Machines.

During the next six months the two plants were completely assembled, taken to their working faces and put in operation in order to discover weak points which it was anticipated would develop in machines incorporating many novel features and new design which had not been tried out before. The only radical change in the design of plant No. 1 or the Anrep plant was the mounting of this machine on caterpillars, consequently little trouble was expected with it, and the committee had every reason to expect that as soon as this machine was moved to its working face, the operation of manufacturing peat fuel could be started immediately. Difficulties of a serious nature were, however, disclosed in the driving mechanism of the caterpillars when the machine was moved under its own power from the railway siding to its working face, a distance of some 2,000 feet over the bog, which at that time

was partially covered with water. After it had been placed in position for operating, a thorough inspection of the caterpillars disclosed the seat of the trouble; and since the mechanism of the two machines is identical, arrangements were immediately made to alter the design. It is necessary here to point out that very serious trouble was also experienced with the field spreader and track layout system for transporting the pulped material to the drying field. The designs for these were obtained from Sweden, and moreover were strictly adhered to, inasmuch as this method for spreading the pulped peat is an integral part of the Anrep plant. In making the necessary alterations to overcome this trouble several weeks were consumed, and it was therefore not until some time in June that an attempt could be made to manufacture peat fuel at anything approximating a normal rate.

Inasmuch as a machine of this type had been employed before, and the Peat Committee were desirous of obtaining as large an output of manufactured peat as possible during the working season, the larger part of the time of the engineer and his staff was concentrated on this plant.

Plant No. 2 was an entirely new departure in peat machinery design, hence it was not expected that it could be successfully operated before a great deal of experimentation entailing many alterations had been conducted; but the difficulties which were discovered were not of a serious character; and if the machine had been placed in a more favourable position on the bog, it could have been got into condition for manufacturing peat fuel before the end of the season. As stated previously, the driving mechanism for the caterpillars on both machines was strengthened, and later on in the season a differential drive was installed on both. With these alterations the caterpillars worked perfectly.

Plant No. 1 (Anrep system) was put in operation on the old working face situated on that part of the bog which has been well drained for some years. Moreover, this portion of the bog was in excellent condition owing to the manufacturing operations which had been conducted during past years. No difficulty, therefore, was encountered from holes, soft spots, or the sinking of the machine in the bog, which was the case with plant No. 2 (Moore system), which had to be operated on an undrained portion of the bog, over a distance about a mile parallel to the Canadian Pacific Railway tracks. This portion of the bog was not only undrained, but had been previously burned, leaving soft spots and holes, some of which it was necessaray to fill as the work progressed. Plant No. 1 had also a well prepared working face and could therefore begin manufacturing operations at once, while in the case of plant No. 2 it was first necessary to construct a working face before peat fuel could be manufactured. This plant was therefore employed, during the time it operated, excavating a working face.

A certain amount of peat fuel was manufactured by plant No. 2 during the time it was employed on this work, but the machine was not operated for this purpose, but for observing difficulties and in remedying the same. The principal feature in the design of this machine is the arrangement for replacing the ordinary track system, cars, cableways, etc., which are absolutely necessary for transporting the pulped peat, and for spreading it on the drying field when the Anrep system is employed. With the Moore system this is effected by means of a bridge about 150 feet long attached at right angles to the peat machine. This bridge is equipped with a belt conveyer and a spreader which is attached to the bridge and travels in a direction parallel to that of the peat machine. Inasmuch as this system for spreading peat has not previously been tried in connexion with any peat machine, it was naturally found upon trial that certain alterations to the machine would have to be made before it could be operated satisfactorily. For example, it was found on trial that the bridgework was hung so low that sufficient clearance between the bottom of the bridge and the top of the bog could not be obtained. This, with a few minor alterations to the spreader, constituted

the principal changes made. If, however, the machine had been tried on a more solid portion of the bog the bridgework might have worked satisfactorily without any alterations. Notwithstanding the difficulties under which this plant was operated, about 800 tons of peat fuel were manufactured during the period of its mechanical try-out.

Plant No. 1 manufactured over 2,000 tons of peat fuel, and its capacity per day increased steadily up to the time operations were discontinued. With the information which the Peat Committee has at hand for this season's mechanical try-out and operations, they have every reason to expect an average output of 6 tons per hour for each machine during a normal season. This output it is expected will be exceeded with plant No. 2. Six tons per hour, however, is looked upon as a conservative, average hourly output.

Sufficient data concerning mechanical difficulties and weak points in the design of both machines were obtained to enable the Peat Committee to put the machines in first-class working order for the season of 1920.

Boilers.

The Peat Committee encountered a great deal of difficulty in purchasing boilers for the two plants, in fact, the great demand for materials of all kinds for war work made the construction of these two peat plants not only difficult, but very costly. It was originally intended to install watertube boilers for burning peat fuel, since such boilers, for the same capacity, are much lighter and more compact than the locomotive type of boiler; but it was found to be absolutely impossible to obtain boilers of the former type, hence the committee was forced to install coal-burning, locomotive boilers, in order to permit of the operation of the plants during this season. Attempts were made to burn peat in these boilers, but the experiment was not successful, owing mainly to the grate area and combustion chamber being too small.

Arrangements have now been made for installing water-tube boilers suitable for the burning of peat fuel, so that when the season of 1920 begins, power for operating the peat machines will be derived from this fuel.

Construction of Office Building, Narrow Gauge Tracks, and Installation of Harvesting Equipment for the purpose of expediting the work of the Peat Committee at the Bog.

A two-story frame building was erected in a convenient position with regard to the two peat machines and the other parts of the field. The upper story of this building is used as an office for the engineer and his staff, while the lower part is used for storage, and as a repair shop. This office is connected with the main line of the Bell Telephone Company, also, with the peat machines, and other parts of the field, by means of a field telephone system. This telephone installation has been the means of saving much time.

Approximately two miles of narrow gauge tracks, with sidings and the necessary switches, were constructed and a loading trestle was erected adjacent to the Canadian Pacific Railway siding. Later on in the season it was found necessary to also erect a storage trestle.

The harvesting equipment consists of a gasoline locomotive and 16 narrow gauge trucks. Provision is now being made to obtain another train of harvesting cars. This will enable the full ouptut of both plants, working day and night, to be handled conveniently, and without loss of time.

Attention should be directed to the fact that this is the first time, in any of the attempts to manufacture peat fuel, that a standard harvesting and loading equipment has been installed, and that the manufacture of peat fuel can now be performed more efficiently and at less cost than ever before.

Observations Concerning the Drying of Peat Fuel.

In all previous efforts which have been made to manufacture peat fuel in Canada, little or no attention was paid to the drying of peat on the field. This is one of the most important phases of the manufacture of peat fuel, since the quality of the fuel very largely depends on its removal from the drying field at the proper time. With a view to obtaining such information as would best assist those desirous of engaging in the manufacture of peat fuel, the Peat Committee deemed it a duty to conduct an investigation concerning problems connected with the drying of peat fuel: for example, the rate at which it dries during the summer months; the logical time for harvesting and shipping; and the proper time for beginning and terminating operations.

With the permission of the Mines Branch of the Department of Mines, the services of Mr. H. A. Leverin were obtained for conducting this investigation. Mr. Leverin spent a considerable portion of the summer months on the bog, systematically sampling the peat fuel in order to determine from time to time its moisture content; the rate of evaporation; and for the purpose of enabling him to determine other factors necessary to the making of a complete report regarding this phase of the manufacture of peat fuel. The necessary meteorological instruments were installed to enable daily observations to be made of the rainfall, humidity, barometric pressure, and temperature.

This report will be included in the final complete report of the Peat Committee, since this investigation has not yet been carried to completion.

Operation of Plant No. 1.

Plant No. 1 was operated intermittently from June 6 until September. In June, peat was manufactured for a period of 74½ hours, during which time 32½ rows, or 357 tons of 25 per cent moisture peat fuel were laid down; in July 104 hours produced 53 rows, or 583 tons; in August 110½ hours produced 62½ rows, or 687 tons, and during the first part of September the plant operated 44 hours and produced 25½ rows, or 280 tons. From these figures it will be seen that the capacity of this plant was, in June, 4·8 tons per hour; in July, 5·6 tons per hour; in August, 6·2 tons per hour; and in September, 6·4 tons per hour.

In June it took an average of 2¼ hours to lay one row of peat; in July, 1 hour and 50 minutes; in August and September, 1 hour and 45 minutes were required to lay the same amount of material; which shows that this machine was approaching its average normal capacity per hour as the season advanced and the men became better acquainted with their work. The above figures have been calculated on the assumption that a row of peat will yield 11 tons of 25 per cent moisture peat fuel. This figure was verified as the minimum figure, from the recorded weights of peat fuel which were taken from the field during the harvesting operations. The capacity of the harvesting cars average over 3,000 pounds of fuel per car, and five rows yield about 38 cars, or 57 tons. Plant No. 1 actually excavated 437,000 cubic feet of raw material, which should yield 11 pounds of fuel per cubic foot. The total quantity of peat excavated should therefore total 2,400 tons, and this should represent the season's output, but, according to the above figures, the season's output was only 1,900 tons.

The difference between these two quantities can only be accounted for by the peat left on the ground, the raw material washed back into the cut, and the lower yield per cubic foot from the top 6 to 12 inches of the bog. The figures given here are therefore conservative as regards the capacity of the machines during the hours they actually manufacture peat fuel.

Operation of Plant No. 2.

During the entire season, which was spent in experimentation and alterations, 9 rows of peat fuel were laid down, the first two amounting to very little, the third at about half the capacity of the machine, and the balance at more or less full capacity. One hundred and sixty thousand cubic feet of raw peat were excavated from the working trench, which had an average depth of five feet at the end of the season. This quantity of raw material represents a production of about 800 to 900 tons, but on account of the deep moss covering the top layers of the bog, which was included in the total excavation, probably not over 600 to 700 tons were made, and this was laid down so late that only a small portion could be sufficiently dried for fuel purposes.

Number 2 drying field was practically undrained, and, hence, was very wet. Drying, therefore, did not take place as rapidly as it will in the season of 1920, when this field will have had the benefit of the drainage produced by the excavation of its working face.

Excellent fuel, however, was made with this machine, which was operated with a maximum complement of six men; and when it approached its normal capacity, produced an equivalent of between 6 and 7 tons per hour. No positive data could be obtained regarding its maximum capacity, since the working face never reached its normal condition.

This plant is now in first-class working order, and no trouble of a serious nature due to mechanical defects is expected when it begins operations again.

Cost of Turning and Cubing Peat.

With Plant No. 1, some 170 rows of peat fuel were manufactured, and of these, 168 rows were turned by contract at $1.80 per row, and 58 rows were cubed at the same price, the other rows, 59 to 70, were cubed at $2 per row, and the balance—in an effort to hasten drying before the frost—was cubed before it should have been done, by day labour, during the time the men were idle while alterations were being made. The peat, up to about row 85, was harvested and the balance left in the field, rows 85 to 140 being in cubes. It may be necessary here to explain that, in manufacturing peat fuel according to the air-dried, machine process, the peat spread on the ground is allowed to dry until the peat blocks are strong enough to stand handling, they are then turned, to permit the reverse side of the block to dry. After drying has proceeded to a certain point, which is determined by experience, these peat blocks are piled up in open stacks to complete the drying.

The production cost of the fuel is indicated in the sheet showing operating costs; but while these costs are estimated only on the time during which the plants actually manufactured peat fuel, it is satisfactory to observe that of the $3,050.77 shown, not over two-thirds, or $2,000, can be charged to the manufacture of the 1,900 tons of fuel mentioned above. The remaining third of the time the men were idle while repairs or changes were being made, of which no detailed account was taken in the distribution of the time of the men.

With regard to the item for turning and cubing, the figure "$504.21 straight time" produced only 770 tons of cubed peat, which would show a cost of 62⅔ cents

per ton for cubing by adults as straight time, but it must be borne in mind that this peat was still very wet, nearly three times its normal weight being handled, and cubing under these conditions would never have been resorted to if it had not been deemed necessary to make every effort to get as much fuel as possible dried before the frost. The actual contract basis in 1919 was $1.80 per row for turning, and $1.80 per row for cubing. This latter figure towards the end of the season was raised to $2 per row. At this figure the maximum cost of turning and cubing a row, or 11 tons, amounts to 35 cents per ton. It is the opinion of the engineer in charge of operations, that it will not be necessary to cube peat fuel manufactured prior to August, and if this is borne out in practice next season it will mean a considerable saving.

Repairs.—The $672.72 expended in repairs represents mainly the cost of renewing the grips on the spreader cars, and splicing the cable, which operation had to be performed many times before a new cable could be obtained. This cable was purchased according to the Swedish specifications, but proved to be too small for the grips on the cars, consequently both the grips and the cable were worn excessively. One man, and sometimes two men, had to be kept at this work continually in order to keep the plant running, but after the new cable was installed only one man was necessary to look after the cars and the cable, and even he had very little to do. It is hoped that with the new cars which will be purchased, there will be one spare car all the time. This will permit any repairs to the cars to be made by the general repair man, which will very materially reduce the expenditure mentioned above.

Fuel.—The item for fuel and supplies cannot be accurately distributed, since steam was kept up practically all the time on both plants, while the plants were actually manufacturing fuel for a comparatively short period. Only a portion, therefore, of the fuel cost can be charged to the manufacturing of peat fuel. The installation in 1920 of boilers on both plants suitable for the burning of peat fuel will very greatly reduce the fuel cost just cited. It is estimated that with these new boilers peat fuel will be burned at a rate of about three tons per 10 hours for each machine, or 6 tons for 10 hours for the two machines.

Summary of Work Accomplished during the Season of 1919.

The two types of plants were assembled and moved to the respective portions of the peat bog where it was intended they should operate. Both machines were given a severe mechanical try-out, covering a period of several months. The minor defects in the design, and mechanical weaknesses which were disclosed as the test progressed, were rectified on the field, and those which were of a more serious character, and which required more attention, were performed at the close of the season.

No fundamental mistakes in the design of either plant, with the exception of the track lay-out system and spreader for plant No. 1, for which the committee was in no way responsible, were disclosed. It was found necessary to make only minor alterations, and to strengthen certain parts at the end of the season. The area of the caterpillars of both machines was increased; this will permit these machines to travel over a comparatively soft bog without causing inconvenience. A novel departure in peat machinery design, namely, the employment of caterpillars on which the machines are mounted, proved a great success, and during a season's operations when peat fuel will be manufactured continuously, a very great saving in time and money will result from their introduction.

Mistakes inherent in the spreading system of plant No. 1 will have been corrected by the time operations commence in the season of 1920.

Plant No. 2 had sufficient of a mechanical try-out to determine its weaknesses, and all these will be remedied by the beginning of the 1920 season, so that it is

expected that both plants will be operated at full capacity during the coming season for two 10-hour shifts. If this hope is realized, production next year will be on a large scale.

Valuable experience has been gained in the harvesting of the manufactured fuel, and its loading on to cars; and a material reduction in the cost of transportation of the fuel from the field to the cars has been realized. The Peat Committee, in addition to the work conducted at the bog, have been in negotiation with the Canadian Pacific Railway with a view to obtaining a reduction in the freight rates between Alfred, Ottawa, Montreal, and other points. The freight rate on a ton of peat fuel to these points was $1.50 from Alfred to Ottawa, and $1.65 from Alfred to Montreal. As a result of the negotiations carried on with the Canadian Pacific Railway Company, these rates have been reduced to $1.25 and $1.35 respectively.

Selling Cost of Peat Fuel at Alfred.

The cost of manufacturing one ton of peat fuel has been estimated on the basis of the fuel manufactured over a short period when plant No. 1 was operating at about normal capacity, but it is confidently hoped that the operations to be undertaken next season will confirm the estimate of $3.50 as the price at which one ton of peat fuel can be sold f.o.b. Alfred. This figure, however, is liable to change when the expenses encountered during the entire working season is charged against the output of fuel manufactured during that time, but it is expected that the figure will not be increased, but slightly reduced.

Distribution of Moneys Expended.

The following statement of expenditures requires no explanation other than has been incorporated in this report. In these statements all moneys expended up to the end of the season is accounted for. There are, however, certain outstanding accounts which have not yet been turned in, but these represent small amounts, and will be included in the next report.

Detailed information can be obtained by referring to sheet No. 1, which shows the distribution of time during the period Plant No. 1 was operated. Sheet No. 2 shows the following labour costs for Plants Nos. 1 and 2: namely, excavation, spreading, and extra men used for various purposes, and also fuel costs. From this it will be seen that the cost of one ton of fuel on the field for Plant No. 1, exclusive of overhead charges, is $1.05, and for Plant No. 2, 60 cents. Sheet No. 3 shows the approximate cost of machines Nos. 1 and 2, and the estimated cost to replace same; harvesting equipment and siding, office tools, telephone, experimenting, manufacturing fuel, and Committee expenses. Sheet No. 4 gives, in detail, the different items which make up the cost of one ton of peat fuel f.o.b. cars. Sheets Nos. 5 and 6 are entitled "the trouble sheets for Plant No. 1," and give, in detail, the troubles which were experienced, and remarks concerning same. Sheets Nos. 7 and 8 give the same information for Plant No. 2. Sheets 9, 10, 11, and 12, show the approximate distribution of all moneys paid out by the Committee, from its appointment, to the end of 1919.

With the assistance of this information, the work accomplished during the season of 1919, can be appreciated.

DISTRIBUTION OF TIME.

Peat Committee Investigations, 1919.

Plant No. 1 only. SHEET No. 1.

Days of month.	June.					July.					August.					September.				
	Possible hours.	Lost by rain.	Unproductive hours.	Productive hours.	Rows peat laid.	Possible hours.	Lost by rain.	Unproductive hours.	Productive hours.	Rows peat laid.	Possible hours.	Lost by rain.	Unproductive hours.	Productive hours.	Rows peat laid.	Possible hours.	Lost by rain.	Unproductive hours.	Productive hours.	Rows peat laid.
1						10		4	6	3½	10		5	5	3	10		10		
2						10		4	6	3½	10		2½	7½	4	10		5½	4½	1½
3						10		4½	5½	2						10		3½	6½	4
4						10		6	4	2	10		4½	5½	3½	10		4½	5½	4½
5						10	5	2½	2½	3½	10		5	5	2½	10		4½	5½	3½
6											10		3½	6½	3½	10	8½		1½	½
7						10		3½	6½	4	10		5	5	3					
8						10		3½	6½	3½	10		9½	1½	1	10	2½	3	4½	2½
9						10		7	3	1	10		3½	6½	3	10		5	5	3
10						10	2	4½	3½	1½						10		3½	6½	4½
11						10	10				10		3½	6½	3	10	10			
12						10		3	7	3½	10		3½	6½	4	10	10			
13	10		3	7	2						10		3	7	3	10		10		
14	10		4	6	2	10		4	6	3½	10		5½	4½	2½					
15						10	10				10		5½	4½	3	5		1	4	2
16	10		4	6	2½	10		9	1		10		7	3	2					
17	10		4	6	3	10		3	7	1										
18	10		5	5	1½	10		10			10	6	1	3	2					
19	10		8	2	1	10		10			10		2	8	5					
20	10		7	3	1½						10		4½	5½	3½					
21	10		5	5	2½	10		3½	6½	3	10		5	5	2					
22						10		3	7	4½	10		2½	7½	5					
23	10		4½	5½	1½	10		4	6	3½	10		4½	5½	4					
24	10		8	2	1	10		8	2	1										
25	10		3½	6½	3	10		10			10		8½	1½	1½					
26	10	10				10		10			10		10							
27	10		2½	7½	4½						10		10							
28	10		3	7	3	10		2½	7½	4	10		10							
29						10		5	5	2	10		10							
30			4	6	3½	10		10			10		10							
31						10		4½	5½	2½										
	150	10	65½	74½	32½	270	27	139	104	53	260	6	148½	110½	62½	125	31	50	44	25½

One row contains 11 tons. Total produced about 1,900 tons. Average production per hour, June 4·8 tons, July 5·6, August 6·2, Sept. 6·4

SESSIONAL PAPER No. 26a

Memorandum re Costs.

ALFRED BOG.

Operating Costs.

SHEET No. 2.

Labour Capacity.	Plant No. 1. No. men.	Per Hour Rate.	Amount.	Plant No. 2. No. men.	Rate.	Amount.
		$ cts.	$ cts.		$ cts.	$ cts.
Excavator—						
Engineer	1	0 60	6 00	1	0 60	6 00
Fireman	1	130.00 mo.	5 00	1	0 35	3 50
Runner	1	0 35	3 50	1	0 40	4 00
Attendant	1	0 30	3 00	2	0 30	6 00
Spreading—						
Load cars	3	0 30	9 00		None.	
Attending spreader	3	0 30	9 00	1	0 30	3 00
Move rails	2	0 30	6 00		None.	
Extra men—						
Clear in front of spreader and steer	1	0 30	3 00		None.	
*Repair cars, etc	1	0 35	3 50		None.	
Water boy	½	0 17½	0 90			0 90
	Totals		48 90			23 40
Fuel—1½ tons coal—3 tons peat each plant			12 00			12 00
Gasoline—3 gals. No. 1			1 25			
Oil (estimated)			1 00			1 00
	Totals		63 15			36 40
Average actual capacity to date			60 tons.			60 tons.
Cost per ton			$1 05			0 60

*This man may be dispensed with.

Memorandum re Expenditures.

SHEET No. 3.

NOTE.—Amounts below are approximate. Accurate figures cannot be obtained until all expenditures are distributed.

Item.	Approx. actual cost.	Est. cost to replace.
Machines—	$	$
No. 1	32,000	25,000
No. 2	26,000	20,000
Harvesting equipment and siding—		
Track	13,000	13,000
Cars		
Locomotive		
Loading platform		
Siding		
Office, tools, phone, etc	1,500	1,500
Experimenting	5,000	
Making fuel	9,000	
Committee expenses—		
Salaries	12,600	
Other expenses	10,400	
Miscellaneous	5,000	
	114,500	Say 60,000

Overhead Cost.

SHEET No. 4.

Capital expenditure, estimated		$ 60,000
Working capital		25,000
Depreciation, say 10% on $60,000	$ 6,000	
Amortization, say 10% on $60,000	6,000	
Superintendent and mechanic	4,000	
Office and stenographer	1,500	
Incidentals, insurance, taxes, etc	1,500	
	$ 19,000	

Estimated Production.
Two plants—day and night, 100 days.
Capacity, average 125 tons per day of 24 hours each per unit.
Total estimated production, say 20,000 tons.
Overhead, say $1 per ton.

TOTAL COST.

Cost raw material, per ton	05		05
Production cost No. 1	1 05	No. 2.	0 60
Cubing and turning	0 30		0 30
Loading on cars or to store	0 60		0 30
Overhead	1 00		1 00
Total per ton	$ 3 00		$ 2 25

Average cost f.o.b. cars or in storage ..... $ 2 62½ per ton
Add for loading one half fuel second time from storage to pile 25c. per ton average 12½

Average cost season output f.o.b. cars ..... $ 2 75

Trouble Sheet, Plant No. 1, 1919.

SHEET No. 5.

ITEM IN ORDER OF IMPORTANCE.

Item.	Remarks.
1. Supporting caterpillars. Driving mechanism broken. Difficulty with clutches. 124 chain broken. Excavator out of line.	These difficulties were practically entirely eliminated when the driving mechanism was rebuilt and latterly a differential drive installed.
2. Spreader, chain broken. Spreader sill broken. Spreader clutches slipping. Sprocket broken. Trouble with engine. Delay in turning.	The No. 1 spreader is being rebuilt with special attention to the weaknesses disclosed. Trouble with the engine was almost entirely due to stopping and starting so frequently due to the clutches which never worked satisfactorily. The drive chain will be replaced with a much stronger one and provision made so two men can turn the spreader in half the time it took five or six to do it in 1919.
3. Spreader cars driving mechanism. Cable slipping. Cable broken. Grips worn out.	Due almost entirely to original cable being too small. This was replaced by a larger cable and specially hardened grips procured and this trouble practically disappeared.
4. Spreader cars system. No cars available to load. Cars off track.	Four new cars are ordered which should materially increase capacity of plant. Mostly at joints in track on spreading side of rectangle. An extra tie will be put in at these joints which will overcome this.
Station car off track. Station car anchor pulled.	The original scheme of holding the station car was defective. This was changed by bracing it direct from the excavator and the trouble disappeared entirely.
5. Excavator chain and pins.	The original pins holding the excavator chain together were poorly designed and wore so that occasionally a pin came out. New pins of better design have been secured and in place.

Trouble Sheet, Plant No. 1, 1919.—*Continued.*

SHEET No. 6.

Item.	Remarks.
6. Soft ground. Caterpillars in a hole. Pivot castings No. 4 caterpillar broken.	The south end of the No. 1 drying field was never cross drained and was very soft in places even along the face. Drains have been put in to remedy this, and the carrying ties on two of the caterpillars will be increased 50 per cent in length, which should prevent further trouble from this cause.
7 Ordinary delays. Iron in macerator. Roots in conveyer. Wait for fuel. Wash boiler. Piston rod loose. Heater tube blew out. Pump gland played out. Repair dry pipe. Weather.	Delays from iron in macerator were few and coupled with delays from roots in conveyer were not very important. Care on the part of the attendants will remedy to an extent. Delays for fuel should disappear when a regular supply of peat is arranged for. Washing boiler should be done on Sundays. The next four items are not important, and are the ordinary hazards of running machinery of this kind. Delays due to weather are not as serious as might be imagined, as the men will work through any ordinary rain, and fuel may be laid out although the drying course is interfered with.
ITEMS IN ORDER OF IMPORTANCE.	SHEET No. 7.
1. Supporting caterpillars driving mechanism broken. Difficulties with clutches. 124 chain broken. EC62 chain broken. Steering.	Difficulty with driving mechanism overcome when this was rebuilt. Difficulty with clutches and steering overcome by use of line to steer by and introduction of differential drive. Driving mechanism has also been raised so chains and sprocket wheels all run clear of moss. When work was commenced several drives were down in the peat most of the time.
2 Conveyer bridge caught on moss. Driving mechanism stalled in moss. Universal joint broken. Trouble with chain drives.	Practically all trouble with the bridge was due to it being too low. This has been raised one foot and a new connection with the platform made in the centre instead of at one end, which will eliminate these troubles.
3. Machine sinking in bog.	Until working face was cut down sufficient to get some drainage the bog was all very soft and many delays and breaks occurred. As the working face became deeper these gradually disappeared, but to eliminate this trouble entirely the supporting caterpillars have been increased 50 per cent in supporting area, which should eliminate this trouble even under such conditions as were met at the start.
4. Feed to belt insufficient.	The feeding mechanism to the belt conveyer at no time during the season had enough capacity to take the material away from the macerator. This has been altered to eliminate this trouble entirely.
5 Macerator repairs.	Due to running macerator light when the cut was first started some of the knives froze in their bearings. Some delays were due to this cause but they disappeared as soon as a normal supply of raw peat was available.
	SHEET No. 8.
6. Excavator element. Pin work. Cutters broken. Supporting frame and driving shaft bent.	In the early part of the operations when the dry top surface of the bog was being excavated the excavator was subject to abnormal wear. The ends of the pins in the chain wore off and the pins came out from time to time. These have been replaced with new pins of much better design. Many roots were also encountered at first and a number of cutters broken and due to inexperience was permitted to stall on a root and the machine to move ahead which strained it badly. A new brace has been added which will prevent this happening again, and spare cutters provided, although the experience with No. 1 working on a proper face shows only a couple of cutters broken in the season.
7 Clutch controls.	Owing to this plant being so new no attempt was made to put in proper clutch controls until it was found where would be the best place to locate them. These will be put in for the 1920 season.

Trouble Sheet, Plant No. 1, 1919.—*Concluded.*

Item.	Remarks.
8 Delay turning spreader.	Serious delay in this operation was encountered at the start. Conditions gradually became better but a new method of handling it has been worked out which should reduce the time for this operation from several hours to possibly 20 minutes.
9. Sundry delays. Wait for fuel. Wait for water. Iron in macerator. Belt slipping. Adjust engines. Excavator caught on roots. Roots in spreader. Weather.	The main delays under this heading were mainly due to starting up on the new face with no proper organization. A lot of delay was caused from trouble in getting water to the boiler, which disappeared as the working ditch became deeper. The belt slipping was due to the bridge being too low, preventing proper adjustment of the parts. Roots in spreader was a minor trouble which should be eliminated by changes which have been made in the spreader.

Committee Business.

SHEET No. 9.

Salaries—			
E. V. Moore, Engineering and Management		$ 11,180 65	
Inspection		1,800 00	
Superintendence		2,000 00	
Drawing and designing		1,266 60	
			$ 16,246 25
Travelling expenses—			
Committee Members	$ 1,191 63		
E. V. Moore	2,406 25		
F. O. Orr	790 21		
A. Anrep	268 24		
A. Leverin	370 00		
			5,026 33
Rent			1,140 00
Office expenses—			
Telephone and telegrams. Includes installation of Bell phone at Alfred	345 81		
Stamps	91 57		
Stationery, drawing supplies, etc	271 25		
General	94 55		
			803 18
			$ 23,215 76

PLANT AND EQUIPMENT.

SHEET No. 10.

Plant No. 1—			
Original cost		$ 28,373 16	
Unload and install		895 05	
Experimental work and alterations, materials		1,518 46	
Labour		731 36	
			$ 31,548 03
Plant No. 2—			
Original cost		$ 21,747 04	
Unload and install		59 57	
Experimental work and alterations, materials		1,044 03	
Labour		2,596 93	
			26,047 57
Harvesting and Loading Equipment—			
Materials		11,127 87	
Labour and install		1,526 94	
			12,654 81
Buildings and Telephone—			
Materials		869 09	
Labour on buildings		359 20	
Labour install telephone		26 35	
			1,254 64
Tools			583 77
Freight and Expenses			1,738 71
			$ 73,827 53

SHEET No. 11.

Operation Expenses.

Plant No. 1—			
Labour in excavation	$ 169 80		
Operate excavator	251 17		
Operate boiler and engine	955 20		
Moving track	554 70		
Spreading	1,119 90		
		$ 3,050 77	
Turn and cube contract	403 90		
Straight time	503 21		
		907 11	
Repairs		672 72	
			$ 4,630 60
Plant No. 2—			
Labour in excavation	12 60		
Operate excavator	154 68		
Operate boiler and engine	709 07		
Spreading	110 60		
		986 95	
Turn and cube		24 40	
Repairs		211 06	
			1,222 41
Supplies—			
Coal	1,223 28		
Gasoline and oil	173 44		
Sundries	447 11		
Spare parts	395 24		
			2,239 07
Harvesting and loading			868 68
Sundry repairs			170 00
			$ 9,130 76

SHEET No. 12.

Other Expenses.

Prepare field for No. 1 plant	$ 255 46	
Prepare field for No. 2 plant	894 60	
		$ 1,150 06
Water boy and general work		483 81
Clean up property		401 86
Move old plant		215 55
Sundries		1,225 71
		$ 3,477 02

Summary.

Committee expenses	$ 23,215 76
Plant and equipment	73,827 52
Operation	9,130 76
Other expenses	3,477 02
Cash advance to E.V.M.	245 04
Cash on hand Alfred account	354 42
	$ 110,250 53

ORE DRESSING AND METALLURGICAL DIVISION.

I.

REPORT OF PROGRESS.

W. B. Timm, *Acting Chief of Division.*

Mr. G. C. Mackenzie, Chief of Division, resigned his position in February. The vacancy thus created was not filled during the calendar year. The writer has been acting as chief since Mr. Mackenzie's resignation.

Mr. R. K. Carnochan was appointed Assistant Engineer in January, to fill the vacancy created by the resignation of Mr. C. S. Parsons in May, 1918.

In the chemical laboratories, the loss of two temporary chemists, Mr. W. T. Graham, in May, and Mr. B. E. Coyne, in October, reduced the staff to two chemists. These vacancies remained unfilled at the end of the calendar year.

The resignations from the staff has resulted in the work being greatly curtailed especially during the latter part of the year.

In July, the writer was instructed to visit a number of ore dressing and metallurgical laboratories, such as the Experimental Stations of the United States Bureau of Mines, and the commercial testing works and industrial research laboratories in the United States, and report on his observations and their bearing on the proposed establishment of ore dressing and metallurgical laboratories at some point in British Columbia. Two months time was devoted to this work.

During the war period, the laboratories were busily engaged in the dressing and concentration of the ores from which war minerals were obtained, and on problems connected with the recovery of these minerals. During the calendar year laboratory work has been devoted entirely to the testing of Canadian ores and minerals, and to the application of ore dressing and metallurgical processes. With reference to the latter (application of new processes), special attention has been concentrated on the flotation of ores, and test work was, and is being conducted on these lines using certain substitutes for oil. This work has not advanced sufficiently for formal report.

II.

ORES TESTED AND REPORTS THEREON.

W. B. Timm, *Acting Chief of Division.*

R. K. Carnochan, *Assistant Engineer.*

The following ores have been tested, and reports made thereon, during the calendar year, 1919:—

No. of Test.	Material.	Locality.	Shipper.	Weight. Tons.	lbs.
105	Molybdenum-Gold Cobalt	New Hazelton, B.C.	New Hazelton Gold—Cobalt Mines, Ltd., Vancouver, B.C.	26	1,772
106	Manganese	Cowichan Lake, B.C.	Canadian Munition Resources Comm., Ottawa		430
107	Tungsten	Falcon Lake, Man.	War Metals Products Co., Winnipeg, Man.	3	1,953
108	Fluorite	British Columbia	Canadian Munition Resources Comm., Ottawa		10
109	Platinum-gold	Caribou, B.C.	Canadian Munition Resources Comm., Ottawa		6
110	Chrome	British Columbia	Canadian Munition Resources Comm., Ottawa		120
111	Lead-zinc	Kimberley, B.C.	Consolidated Mining & Smelting Co., Trail, B.C.		755
112	Tungsten	Dublin Gulch, Y.T.	Frank Cantin, Esq., Dawson City, Y.T.		1,393
113	Graphite	Low, Que.	Robt. Bryce, Esq., Toronto	30	272
114	Iron	Clarendon, Ont.	Poe Mining Co., Clarendon Station, Ont.		200
115	Fluorite	Wallbridge Mines, Madoc, Ont.	G. M. Wallbridge, Esq., Madoc, Ont.		300
116	Molybdenite	Egan Tp., Wright Co., Que.	G. F. Creaghan, Esq., Ottawa, Ont.		120
117	Silica	St. Canute, Que.	Stinson-Reeb Builders Supply Co., Montreal, Que.		300
118	Copper-nickel	Sudbury, Ont.	Nicu-Steel Corporation, Ltd., Toronto, Ont.	1	
119	Tungsten	Dublin Gulch, Y.T.	G. B. Mackenzie, Esq., Dawson City, Y.T.		16
120	Pyrite	Caldwell Mine, Flower Station, Ont.	Grasselli Chemical Co., Ltd., Cleveland, Ohio	10	
121	Manganese	Teneeape Mine, Kennetcooke, Sta., N.S.	A. A. Hassan, Esq., New York City	1	
122	Barite	Lanark Co., Ont.	T. B. Caldwell, Esq., Lanark, Ont.		10
123	Euxenite	Maberly, Ont.	Geological Survey, Ottawa		96
124	Tungsten	Dublin Gulch, Y.T.	Wm. Steinberger, Esq., Dawson City, Y.T.		146
125	Molybdenite	Harvey, Ont.	J. H. Teare, Esq., Sault Ste. Marie, Ont.		1,000
126	Graphite	Buckinghnm, Que.	Quebec Graphite Co., Buckingham, Que.	20	
127	Gold	Bingo Mine, The Pas District, Man.	M. R. Blake, Esq., Winnipeg, Man.		68

DETAILED PARTICULARS OF CONCENTRATION AND SEPARATION TESTS.

January 28, 1919.

Test No. 105.

A shipment of ore was received on August 6, 1918, from The New Hazelton Gold-Cobalt Mines, Ltd., New Hazelton, B.C.

This shipment consisted of 669 bags, which gave the following weights, analyses, and content:—

Net weight (wet)	53,772	pounds.
Moisture—1·01 per cent.	544	"
Dry net weight	53,228	"
Analysis —MoS_2	1·40	per cent.
—MoO_3	0·18	"
—Co	1·12	"
—Ni	0·60	"
—As	8·98	"
—Au	1·24	ozs.
Content—MoS_2	745·19	pounds.
—Co	596·15	"
—Ni	319·37	"
—As	4,779·87	"
—Au	33·00	ozs.

The object of the test work was to concentrate the values of the ore, and also obtain a separation of these values as far as practical. As the cobalt, nickel, arsenic, and gold values were intimately associated, it was feasible to concentrate these by water concentration, and also to obtain a separation and concentration of the molybdenite values by flotation.

The shipment was divided into three lots as follows:—

Lot No. 1.—Test No. 1, Dry net weight	12,144	pounds.
Lot No. 2.—Test No. 2, Dry dry weight	35,234	"
Lot No. 3.—Test No. 3, Dry net weight	5,850	"

Lot No. 1, Test 1.—The procedure was as follows: The ore was crushed to 20 mesh and concentrated on a Wilfley concentrator to remove as much as possible of the cobalt, nickel, arsenic, and gold values. Two products were made, a concentrate and tailing. The tailings were reground in a Hardinge mill to 60 mesh and the molybdenite concentrated by means of the Callow pneumatic flotation process. The flotation tailings were rerun over the Wilfley concentrator to further remove any cobalt, nickel, arsenic, and gold values.

Lot No. 2, Test 2.—The procedure was as follows: The ore was crushed to 40 mesh and concentrated on a Wilfley concentrator to remove as much as possible of the cobalt, nickel, arsenic, and gold values. Two products were made, a concentrate and tailing. The tailings were reground in a Hardinge mill to 80 mesh and the molybdenite concentrated by flotation in a Callow unit. The flotation tailings were rerun over the Wilfley concentrator and the tailings from the table were considered final and allowed to go to waste.

Lot No. 3, Test 3.—The procedure was as follows: The ore was ground in a Hardinge mill to 80 mesh and the molybdenite first floated in a Callow unit. The flotation tailings were concentrated on a Wilfley concentrator to remove the cobalt, nickel, arsenic, and gold values, and the tailings from the table pumped to waste.

This latter test was run to obtain a comparison of results between tabling followed by flotation, and flotation followed by tabling.

The results are contained in the attached tables.

Conclusions.—From the attached summary, the actual recoveries made on this carload of ore were as follows:—

In Table Concentrates—		
Cobalt	72·6	per cent
Nickel	87·5	"
Arsenic	84·9	"
Gold	83·5	"
In Flotation Products—		
Molybdenite	54·4	"

These recoveries should be improved upon in practice where a closed circuit could be maintained and the losses due to handling and slime overflow would be reduced to a minimum.

As the molybdenum values are of secondary value as compared to the other metals present, it is advisable to remove as much as possible of the cobalt, nickel, arsenic, and gold values before flotation, to recover the molybdenite values. From the attached tables it is shown that most of these values can be removed at 40 mesh, and as it is necessary to grind it to 100 mesh to recover the molybdenite values it would not be wise to float first and table afterwards, as the loss in cobalt-nickel-arsenic-gold values due to fine grinding would not compensate for the higher recovery of the molybdenite.

From the test work conducted, the procedure to follow on the concentration of this ore would be as follows:—

The crude ore crushed in a jaw crusher to 1½ inch to 1 inch and ground in a wet ball mill in circuit with a classifier to about 40 mesh and concentrated on tables of the Wilfley type; the table tailings reground in a ball or tube mill to 100 mesh in circuit with a classifier and the molybdenite floated in an oil flotation unit; the tailings from the flotation unit concentrated on slime tables or vanners.

Concentration Tables—New Hazelton Gold—Cobalt Mines, Limited.

	Product.	Mesh.	Weight.	Analysis.						Content.					Percentages of values.				
				MoS_2	MoO_3	Co.	Ni	As.	Au.	MoS_2	Co.	Ni.	As.	Au.	MoS_2	Co.	Ni	As.	Au.
			Lbs	%	%	%	%	%	ozs.	Lbs.	Lbs.	Lbs.	Lbs.	ozs.	%	%	%	%	%
Test No. 1.	Table Concentrates	20	1,574	1·00	.....	5·42	3·14	51·00	7·55	15·74	85·31	49·42	802·74	5·91	9·3	62·7	67·8	73·6	78·9
	Flotation Concentrates	60	155	52·28	.....	0·53	0·27	3·52	1·50	81·03	0·82	0·42	5·46	0·116	47·6	0·6	0·6	0·5	1·5
	2nd Table Concentrates	60	217	1·34	.....	5·05	2·70	47·73	3·05	2·90	10·96	5·86	103·57	0·33	1·7	8·1	8·1	9·4	4·4
	Tailings	60	10,198	0·67	.....	0·35	0·10	1·52	0·04	68·33	35·69	10·20	155·01	0·204	40·2	26·2	14·0	14·2	2·7
	Losses	.....	.....	.....	.....	.....	.....	.....	.....	2·02	3·23	6·96	23·75	0·91	1·2	2·4	9·5	2·3	12·5
	Crude Ore	.....	12,144	1·40	0·18	1·12	0·60	8·98	1·24	170·02	136·01	72·86	1,090·53	7·53	100·0	100·0	100·0	100·0	100·0
Test No. 2.	Table Concentrates	40	4,725	2·20	.....	6·05	3·95	55·15	7·80	103·95	285·86	186·64	2,605·84	18·43	21·0	72·5	88·3	82·3	84·4
	Flotation Concentrates	80	569	53·47	.....	0·60	0·25	3·31	1·35	304·24	3·41	1·42	18·83	0·38	61·7	0·9	0·7	0·6	1·7
	2nd Table Concentrates	80	91	1·35	.....	3·75	2·48	35·02	2·30	1·23	3·41	2·26	31·87	0·10	0·3	0·9	1·1	1·0	0·5
	Tailings	80	29,849	0·25	.....	0·26	0·04	1·48	0·02	74·62	77·61	11·94	441·77	0·30	15·1	19·6	5·7	14·0	1·4
	Losses	.....	.....	.....	.....	.....	.....	.....	.....	9·23	24·33	9·14	65·70	2·63	1·9	6·1	4·2	2·1	12·0
	Crude Ore	.....	35,234	1·40	0·18	1·12	0·60	8·98	1·24	493·27	394·62	211·40	3,164·01	21·84	100·0	100·0	100·0	100·0	100·0
Test No. 3.	Flotation Concentrates	80	94	58·29	.....	0·78	0·47	4·50	6·60	54·79	0·73	0·44	4·23	0·31	66·9	1·1	1·3	0·8	8·5
	Table Concentrates	80	980	1·51	.....	5·35	3·05	44·70	3·90	14·80	52·43	29·89	438·06	1·91	18·0	80·0	85·2	83·4	52·7
	Tailings	80	4,776	0·26	.....	0·25	0·10	1·62	0·03	12·42	11·94	4·78	77·37	0·07	15·1	18·2	13·6	14·7	1·9
	Losses	.....	.....	.....	.....	.....	.....	.....	.....	.....	0·42	.....	5·67	1·337	.....	0·7	.....	1·1	36·9
	Crude Ore	.....	5,850	1·40	0·18	1·12	0·60	8·98	1·24	81·90	65·52	35·10	525·33	3·627	100·0	100·0	100·0	100·0	100·0
Rerun of Flotation Concentrates	Table Concentrates	.....	68	16·04	.....	5·32	3·48	29·80	23·40	10·91	3·62	2·37	20·26	0·80	†	.....	.....	.....	.....
	Flotation Conc. No. 1	+	250	70·20	.....	0·22	0·08	1·20	0·02	175·50	0·55	0·20	3·00	0·0025	†	.....	.....	.....	.....
	Flotation Conc. No. 2	+	150	67·80	.....	0·32	0·13	1·28	0·30	101·70	0·48	0·19	1·92	0·0225	†	.....	.....	.....	...
	Flotation Middlings	+	350	36·63	.....	0·78	0·37	4·86	0·20	128·21	2·73	1·29	17·01	0·035	†	.....	.....	.....	...
	Losses	.....	.....	.....	.....	.....	.....	.....	.....	23·74	−2·42	−1·77	−13·67	−0·054	†	.....	.....	.....	...
	Totals	.....	818	53·80	.....	0·61	0·28	3·49	0·20	440·06	4·96	2·28	28·52	0·806	†	.....	.....	.....	.....
Summary.	Table Concentrates	*	7,655	7·95	.....	5·65	3·65	53·30	7·20	149·27	432·51	279·41	4,060·12	27·558	20·0	72·6	87·5	84·9	83·5
	Flotation Products	*	750	54·06	.....	0·50	0·22	2·92	0·16	405·41	3·76	1·68	21·93	0·06	54·4	0·6	0·5	0·5	0·2
	Tailings	.....	44,823	0·35	0·20	0·28	0·06	1·50	0·03	155·37	125·24	26·92	674·15	0·574	20·9	21·0	8·4	14·1	1·7
	Losses	.....	.....	.....	.....	.....	.....	.....	.....	35·14	34·64	11·36	23·67	4·808	4·7	5·8	3·6	0·5	14·6
	Crude Ore	.....	53,228	1·40	0·18	1·12	0·60	8·98	1·24	745·19	596·15	319·37	4,779·87	33·006	100·0	100·0	100·0	100·0	100·0

NOTE:—*Final Concentration Products, Table Concentrates and Flotation Products. Flotation Products marked+, namely concentrates No.1, No. 2 and middlings.
†These Results do not check with the totals given in last line of this table which are the totals of Flotation Concentrates from Tests, 1, 2 and 3, because there was a small accumulation from the three tests remaining in the cells which was rerun with Flotation Concentrates.

Ottawa, February 5, 1919.

Test 106.

A shipment of 430 pounds of manganese ore in two lots was received on October 22, 1918, from Cowichan lake, Vancouver island, B.C.

Lot No. 1 consisted of three sacks from the Black Prince claim, and gave the following analysis:—

Metallic	Manganese	22·09 per cent.
"	Iron	3·22 "
	Silica	58·16 "
	Phosphorus	0·061 "
	Sulphur	0·165 "

Lot No. 2 consisted of one sack from the Pacific claim, and gave the following analysis:—

Metallic	Manganese	15·66 per cent.
"	Iron	6·39 "
	Silica	66·92 "
	Phosphorus	0·089 "
	Sulphur	0·166 "

Concentration tests by jigging and tabling were made on these two lots to determine whether the ore could be treated successfully in this manner.

Each lot was crushed to pass 3 mesh or to ¼-inch size, and sized on 6, 12, 20, and 30 mesh screens; the sizes coarser than 30 mesh were jigged while the sizes through 30 mesh were tabled.

The weights and analyses of the resulting products were as follows:—

Lot No. 1—

Mesh.	Product.	Weight Lb.	Per cent Mn.	Per cent Fe.
— 3+ 6	Jig concentrates	17·5	37·60	2·68
— 3+ 6	" tailings	106·0	19·40	2·50
— 6+12	" concentrates	12·0	32·54	2·40
— 6+12	" tailings	57·0	19·44	2·50
—12+20	" concentrates	7·0	25·07	1·70
—12+20	" tailings	17·5	21·70	1·70
—20+30	" concentrates	7·0	24·63	0·74
—20+30	" tailings	7·5	23·30	0·79
—30	Table concentrates	4·5	37·45	1·00
—30	" tailings	24·0	19·78	0·70

Lot No. 2—

Mesh.	Product.	Weight Lb.	Per cent Mn.	Per cent Fe.
— 3+ 6	Jig concentrates	7·5	26·65	4·25
— 3+ 6	" tailings	34·5	12·30	4·20
— 6+12	" concentrates	2·5	25·33	3·40
— 6+12	" tailings	14·5	12·87	3·52
—12+20	" concentrates	2·0	20·84	2·70
—12+20	" tailings	3·5	11·59	2·85
—20+30	" concentrates	0·5	16·65	1·25
—20+30	" tailings	2·5	16·31	1·50
—30	Table concentrates	0·5	32·12	2·65
—30	" tailings	4·0	14·87	1·40

Conclusions.—The above results show conclusively that the ore cannot be concentrated by specific gravity methods, using jigs and tables. A partial separation was made, but the ratio of concentration was very small, and the percentage of manganese in both concentrates and tailings unsatisfactory.

Ottawa, January 9, 1919.

Test No. 107.

A shipment of scheelite ore was received on November 15, 1918, from "The War Metals Products Company," Winnipeg, Man.

This shipment was from the Falcon Lake district, and consisted of 90 bags, having the following weights, analysis, and content:—

Gross weight	7,996 pounds.
Net weight	7,953 "
Moisture, 0·40%	32 "
Net dry weight	7,921 "
Analysis—WO_3	1·65 per cent.
MoS_2	0·10 "
Au	None.
Content—WO_3	130·70 pounds.
MoS_2	7·92 "

The mineral constituents of the ore were scheelite (calcium tungstate), molybdenite (molybdenum sulphide), and pyrite (iron sulphide). The rock constituents were a green coloured mineral, probably olivine; a dark coloured mineral, hornblende, and calcite.

Concentration tests were conducted to recover the tungsten values in the form of scheelite concentrates. No attention was paid to the molybdenite, as it was present in such small quantities.

The ore was crushed to 20 mesh in a dry ball mill, and fed by a push feeder to a Wilfley concentrator, water being added below the feeder to obtain the required pulp density for the table. From the concentrator three products were made, a concentrate, middling, and tailing, of the following weights, analyses, and content:—

Concentrates	146 pounds.
Analysis, WO_3	70·90 per cent.
Content, WO_3	103·51 pounds.
Percentage of WO_3 values	79·3 per cent.
Middlings	860 pounds.
Analysis, WO_3	2·90 per cent.
Content, WO_3	24·94 pounds.
Percentage of WO_3 values	19·0 per cent.
Tailing to waste	6·915 pounds.
Analysis, WO_3	0·04 per cent.
Content, WO_3	2·76 pounds.
Percentage of WO_3 values	2·1 per cent.

The middlings from the table were reground to 50 mesh and concentrated on the table. Two products were in this case, a concentrate, and tailing, of the following weights, analyses, and content:—

Concentrates	31 pounds.
Analysis, WO_3	69·34 per cent.
Content, WO_3	21·50 pounds.
Percentage of WO_3 values	16·4 per cent.
Tailings to waste	829 pounds.
Analysis, WO_3	0·35 per cent.
Content, WO_3	2·90 pounds.
Percentage of WO_3 values	2·2 per cent.

Summary.—The following is a summary of the results of the concentration of this shipment of scheelite ore:—

	Crude ore.	Concentrates.	Tailings.
Weights, lb.	7,921	177	7,744
Analysis, WO_3	1·65%	70·63%	0·073%
Content, WO_3, lb.	130·70	125·01	6·69
Percentage of WO_3 values	100·0%	95·7%	4·3%

Conclusions.—From the above test a high grade tungsten concentrate of grade 70·63 per cent was made, with a recovery of 95·7 per cent of the tungsten values in the ore. These results are very satisfactory for a low grade ore, considering the comparatively coarse crushing necessary to obtain the separation. This is a very favourable point, as it eliminates the slime loss due to fine crushing. A clean tailing can be discarded at 20 mesh, leaving a small percentage of middling product to be reground.

Ottawa, February 4, 1919.

Test No. 108.

A small sample of 10 pounds of fluorite was received on November 18, from Dr. Ferrier, of the Canadian Munition Resources Commission.

This sample was crushed to 50 mesh and a small sample taken for analysis which gave the following:—

Calcium fluoride—CaF_2	47·20 per cent.
Calcium carbonate—$CaCO_3$	2·50 "
Strontium sulphate—$SrSO_3$	32·30 "
Silica —SiO_2	6·50 "
Iron sulphide—FeS_2	3·70 "
Alumina—Al_2O_3	3·00 "
Magnesia	present.
Undetermined	4·80 per cent.

As the analysis shows, 3·70 per cent of iron sulphides were present. Small tests were made by table concentration and flotation to remove these sulphides.

Analysis of the table product showed:—

Fe	0·90 per cent.
FeS_2	1·94 "

Analysis of the flotation product showed:—

Fe	0·50 per cent.
FeS_2	1·07 "

Table concentration removed the coarse pyrite, but a percentage of the fine pyrite slimed and was carried over into the fluorite product.

Flotation concentration removed the fine pyrite, but a percentage of the coarse pyrite was too heavy to float satisfactorily and remained in the fluorite product.

A combination of table and flotation concentration should give satisfactory results.

Ottawa, March 3, 1919.

Test No. 109.

A sample of about six pounds of platinum-gold concentrates was received from the Bullion Mines, Cariboo District, B.C., through the Canadian Munition Resources Commission.

This sample was submitted for testing amalgamation of the platinum group of metals by a new method which consisted of sprinkling zinc amalgam on the dressed plates, the pulp being fed over the plates in a weak solution of copper sulphate and sulphuric acid. An electro-chemical action takes place, forming a permanent coating of copper on the platinum, which in passing over the plates is held by the mercury.

One-half of the sample received was taken and crushed to 150 mesh. A sample was cut out for assay. One pound of the material through 150 mesh was placed in a bottle, with 200 c.c. of a 0·05 per cent copper sulphate and a 0·05 per cent sulphuric

acid solution. One-tenth of a pound of mercury, to which had been added 1 gram of powdered zinc amalgam, was put in the bottle and the bottle gently rolled for 10 minutes. The contents of the bottle were then panned to recover the mercury, and the tailings sampled and assayed.

The results of this test were as follows:—

Pulp before amalgamation	Au.—0·25 oz.	Pt.—0·013 oz.
Pulp after amalgamation	Au.—0·15 oz.	Pt.—0·006 oz.
Retort sponge	Au.—0·14 oz.	Pt.—0·004 oz.
Extraction	Au.—40 per cent.	Pt.—54 per cent.

Another pound sample was taken of the 150-mesh material and placed in the bottle with 200 c.c. of 0·1 per cent copper sulphate and 0·1 per cent sulphuric acid solution. One-tenth of a pound of mercury to which was added 1 gram of powdered zinc amalgam was put in the bottle and the bottle gently rolled for ten minutes. The contents of the bottle were panned to recover the mercury, and the tailings sampled and assayed.

The result obtained from this test was similar to the preceding one.

The tailings from these two tests were then put into a pebble jar with 400 c.c. of 0·1 per cent copper sulphate and 0·1 per cent sulphuric acid solution. One-fifth of a pound of mercury, to which was added 2 grams of powdered zinc amalgam, was put in the jar and the whole revolved for one hour. The contents were then panned to recover the mercury and the tailings sampled and assayed.

The results were as follows:—

Pulp before amalgamation	Au.— 0·12 oz.	Pt.— 0·007 oz.
Pulp after amalgamation	Au.— 0·10 oz.	Pt.— 0·005 oz.
Extraction	Au.—17 per cent.	Pt.—30 per cent.
Or a further extraction of	Au.— 8 per cent.	Pt.—15 per cent.

The remaining portion of the original concentrate was then ground to 200 mesh and sampled for assay. One side of a set of standard amalgamation plates was partitioned off and the plates dressed. The upper two plates were sprinkled with powdered zinc amalgam. A quantity of 0·2 per cent copper sulphate and 0·2 per cent sulphuric acid solution was made up and fed with the pulp over the plates. The tailings were panned to remove any mercury which had been carried over, and then sampled and assayed.

The results of the test were as follows:—

Pulp before amalgamation	Au.— 0·10 oz.	Pt.— 0·003 oz.
Pulp after amalgamation	Au.— 0·06 oz.	Pt.— 0·001 oz.
Extraction	Au.—40 per cent	Pt.—66 per cent.

Summary and conclusions.—Results of the last test performed in a commercial way were similar to the bottle tests. There is a large variation in the two head samples of the same material, illustrating the difficulty in getting an accurate sample. The accuracy of the above tests is doubtful owing to the low assay of the material on which the tests were conducted.

Ottawa, March 3, 1919.

Test No. 110.

A shipment of 420 pounds, in two boxes, of chrome ore was received on December 24, 1918, from Dr. Ferrier, of the Canadian Munition Resources Commission.

On examination the chromite was found to be finely crystalline, much more so than the Black Lake chromite, necessitating finer grinding to free it from the gangue. The gangue consisted of serpentine. Iron pyrites was also present in the ore.

The ore was crushed to 50 mesh and sampled for analysis, which gave the following:—

Cr_2O_3	10·7 per cent.

A small preliminary test was run on 24 pounds on a small Wilfley table. The weights, analysis, and content of the products were as follows:—

Ore taken	24 pounds.
Analysis Cr_2O_3	10·7 per cent.
Content Cr_2O_3	2·57 pounds.
Concentrates obtained	3·0 pounds.
Analysis Cr_2O_3	47·34 per cent.
S	2·40 per cent.
Content Cr_2O_3	1·42 pounds.
Percentage of Cr_2O_3 values	55·3
Middlings obtained	1·5 pounds.
Analysis Cr_2O_3	12·75 per cent.
Content Cr_2O_3	0·19 pounds.
Percentage of Cr_2O_3 values	7·5
Tailings obtained	12·5 pounds.
Analysis Cr_2O_3	4·56 per cent.
Content Cr_2O_3	0·57 pounds.
Percentage of Cr_2O_3 values	22·2
Slime loss	7·0 pounds.
Analysis Cr_2O_3	5·56 per cent.
Content Cr_2O_3	0·39 pounds.
Percentage of Cr_2O_3 values	15·0

A larger test was then conducted on the remainder of the ore on the large Wilfley table. Two grades of concentrates were cut out, a middling held, and a tailing run to waste after being sampled. The results were as follows:—

Weight of ore taken	390 pounds.
Analysis Cr_2O_3	10·70 per cent.
Content Cr_2O_3	41·73 pounds.
First concentrates	37·0 pounds.
Analysis Cr_2O_3	48·88 per cent.
S	2·20 per cent.
Content Cr_2O_3	18·09 pounds.
Percentage of Cr_2O_3 values	43·4 "
Second concentrates	29 pounds.
Analysis Cr_2O_3	42·10 per cent.
S	1·13 per cent.
Content Cr_2O_3	12·21 pounds.
Percentage of Cr_2O_3 values	29·3
Middlings	11 pounds.
Analysis Cr_2O_3	17·00 per cent.
Content Cr_2O_3	1·87 pounds.
Percentage of Cr_2O_3 values	4·5 per cent.
Tailings and slime loss	313 pounds.
Analysis Cr_2O_3	3·05 per cent.
Content Cr_2O_3	9·56 pounds.
Percentage of Cr_2O_3 values	22·8

Tailings as samples, which does not include slime loss, showed an analysis of 2·51 per cent Cr_2O_3.

Summary and conclusions.—The above results show that the chrome values are practically all freed from the gangue at 50 mesh; that a satisfactory separation can be made by water concentration on tables resulting in a recovery of 72·7 per cent of the chromite values, in concentrates of first grade 48·88 per cent Cr_2O_3, and second grade 42·10 per cent Cr_2O_3. Both these grades are metallurgical products and can be used for reduction to ferro-chrome, but on account of the iron sulphide present in the ore, which reports in the concentrates by water separation on tables, they could not be classed as a chemical product.

Ottawa, March 19, 1919.

Test No. 111.

A shipment of six sacks, containing 645 pounds of heat-treated Sullivan ore, was received on January 8, 1919, from the Consolidated Mining and Smelting Company, Limited, of Trail, B.C. Previous shipments of this ore consisted of a 10-pound sample and also a sack containing about 100 pounds.

The object of the test work was to determine whether a satisfactory separation could be made of the zinc-lead values from the iron by the use of the Grondal wet magnetic separator.

For a preliminary test the 100-pound lot was taken and ground to the following:—

On 200	45 per cent.
Through 200	55 per cent.

A sample was cut out which gave the following analysis:—

Fe	30·20 per cent.
Zn	20·00 per cent.
Pb	13·35 per cent.

The Grondal separator was adjusted so that the feed in passing over the bridge in the magnetic field would be as close to the magnets as possible. The strongest field possible for our installation was used, namely 6.5 amperes × 110 volts.

Ninety-five pounds of the heat-treated ore ground to the fineness given above was fed to the separator, and the magnetic and non-magnetic products caught. Very little magnetic product was obtained, so little that the test was considered a failure.

The non-magnetic product from the Grondal separation was run through the Ullrich magnetic separator. A separation was here made, so it was decided to make a test run on the heat-treated ore, through this separator.

For this test the shipment of 645 pounds was taken, and crushed to the fineness given in the screen test of the table. It was then cut in two, one lot held and the other sampled down for analysis and for the test run. The following is the analysis of the ore to the separator:—

Fe	30·80 per cent.
Zn	21·18 per cent.
Pb	12·17 per cent.

The rings on the separator were adjusted as follows:—

Ring 1	¾-inch from feed plate.
Ring 2	⅝-inch from feed plate.
Ring 3	½-inch from feed plate.
Ring 4	⅜-inch from feed plate.

The magnetic field obtained was from a current strength of 10 amperes by 110 volts.

Six products were made, a magnetic product from each ring, and two non-magnetic products, namely, a middling and zinc-lead product. The results of this separation are given in the table.

The magnetic products were reground to the fineness given in the screen tests of the table, and rerun through the separator. The results of these runs are also given in the table, as well as a summary of the separation on this ore.

Magnetic Separation of Heat-treated Sullivan Ore—Ullrich Four-pole, Four-ring Magnetic Separator.

First Separation on Heat-treated Ore.

Screen Test.					Separation.									
					Weight.	Analysis.			Content.			Percentages.		
Tyler Standard.	Weight. Grams.	Per cent.	Cumulative per cent.	Product.	Lbs.	% Fe.	% Zn.	% Pb.	Lbs. Fe.	Lbs. Zn.	Lbs. Pb.	Fe.	Zn.	Pb.
				Ring No. 1	73·5	52·0	5·57	5·10	38·220	4·094	3·748	41·3	6·4	10·2
+65	5	0·2	0·2	Ring No. 2	7·0	49·6	6·32	5·57	3·472	0·442	0·390	3·8	0·7	1·1
−65+100	128	6·0	6·2	Ring No. 3	35·0	50·6	6·11	5·54	17·710	2·138	1·939	19·1	3·4	5·3
−100+150	459	21·7	27·9	Ring No. 4	51·0	30·9	22·02	9·80	15·759	11·230	4·998	17·0	17·6	13·7
−150+200	680	32·1	60·0	Middlings	20·5	12·0	31·06	21·35	2·460	6·367	4·377	2·7	10·0	12·0
−200	847	40·0	40·0	Zinc-lead	93·5	11·6	33·83	18·83	10·846	31·631	17·606	11·7	49·7	48·1
				Slime loss	20·0	20·4	38·72	17·56	4·087	7·744	3·513	4·4	12·2	9·6
Totals	2,119	100·0		Totals	300·5	30·8	21·18	12·17	92·554	63·646	36·571	100·00	100·0	100·0

Separation of Ring No. 4 Product after Regrinding.

+100	1	0·1	0·1	Ring No. 1	2·50	54·05	3·91	4·12	1·486	0·108	0·113	9·5	0·9	2·3
				Ring No. 2	0·25									
−100+150	39	5·5	5·6	Ring No. 3	9·00	55·05	3·57	4·02	4·954	0·321	0·362	31·6	2·9	7·3
				Ring No. 4	11·00	43·35	12·97	4·66	4·768	1·427	0·513	30·4	12·8	10·3
−150+200	96	13·7	19·3	Middlings	4·50	16·60	34·45	11·51	3·403	7·062	2·360	21·7	63·2	47·4
				Zinc-lead	16·00									
−200	567	80·7	80·7	Slime loss	7·50	14·28	30·09	21·67	1·071	2·257	1·625	6·8	20·2	32·7
Totals	703	100·0		Totals	50·75	30·90	22·02	9·80	15·682	11·175	4·973	100·0	100·0	100·0

Separation of Ring No. 3 Product after Regrinding.

+100	0·5	0·1	0·1	Ring No. 1	16·0	56·60	2·25	3·44	9·622	0·382	0·585	55·1	18·1	30·6
				Ring No. 2	1·0									
−100+150	17	3·6	3·7	Ring No. 3	7·5	57·15	2·05	2·70	4·286	0·154	0·202	24·5	7·3	10·6
				Ring No. 4	3·5	53·95	5·04	2·97	1·888	0·176	0·104	10·8	8·4	5·4
−150+200	19	10·4	14·1	Middlings	1·0	23·85	25·60	16·44	0·954	1·024	0·658	5·5	48·6	34·4
				Zinc-lead	3·0									
−200	405	85·9	85·9	Slime loss	2·5	28·28	14·88	14·48	0·707	0·372	0·362	4·1	17·6	19·0
Totals	471·5	100·0		Totals	34·5	50·60	6·11	5·54	17·157	2·108	1·911	100·0	100·0	100·0

Magnetic Separation of Heat-treated Sullivan Ore—Ullrich Four-pole, Four-ring Magnetic Separator.—*Concluded.*

Separation of Ring No. 1 and No. 2 Products after Regrinding.

Screen Test.					Separation.									
						Analysis.			Content.			Percentage.		
Tyler Standard.	Weight. Grams.	Per cent.	Cumulative per cent.	Product.	Weight Lbs.	% Fe.	% Zn.	% Pb.	Lbs. Fe.	Lbs. Zn.	Lbs. Pb.	Fe.	Zn.	Pb.
+100	0	0·0	0·0	Ring No. 1	42·0	57·15	1·53	2·34	24·574	0·658	1·006	59·3	14·6	24·4
				Ring No. 2	1·0									
−100+150	18	3·3	3·3	Ring No. 3	16·5	56·80	1·70	2·11	9·372	0·280	0·353	22·6	6·2	8·6
				Ring No. 4	6·5	54·70	3·89	2·90	3·555	0·253	0·188	8·6	5·6	4·6
−150+200	52	9·7	13·0	Middlings	3·5	26·05	23·19	15·49	2·344	2·087	1·394	5·7	46·4	33·9
				Zinc-lead	5·5									
−200	469	87·0	87·0	Slime loss	5·0	31·74	24·52	23·42	1·587	1·226	1·171	3·8	27·2	28·5
Totals	539	100·0		Totals	80·0	51·79	5·63	5·14	41·432	4·504	4·112	100·0	100·0	100·0

SUMMARY.

Combined Iron Products.

Iron products represent ·35 per cent by weight of original ore.	Rings Nos. 1 & 2 rerun of No. 4	2·75	54·05	3·91	4·12	1·486	0·108	0·113			
	Ring No. 3 rerun of No. 4	9·00	55·05	3·57	4·02	4·954	0·321	0·362			
	Rings Nos. 1 & 2 rerun of No. 3	17·00	56·60	2·25	3·44	9·622	0·382	0·585			
	Ring No. 3 rerun of No. 3	7·50	57·15	2·05	2·70	4·286	0·154	0·202			
	Ring No. 4 rerun of No. 3	3·50	53·95	5·01	2·97	1·888	0·176	0·104			
	Rings Nos. 1 & 2 rerun of Nos. 1 and 2	43·00	57·15	1·53	2·34	24·574	0·658	1·006			
	Ring No. 3 rerun of Nos. 1 & 2	16·50	56·80	1·70	2·14	9·372	0·280	0·353			
	Ring No. 4 rerun of Nos. 1 & 2	6·50	54·70	3·89	2·90	3·555	0·253	0·188			
	Totals	105·75	56·49	2·21	2·75	59·737	2·332	2·913	65·0	3·7	8·0

Combined Zinc-lead Products.

Zinc products represent 49 per cent by weight of original ore.	Middlings first separation	20·50	12·00	31·06	21·35	2·460	6·367	4·377			
	Zinc-lead first separation	93·50	11·60	33·83	18·83	10·846	31·631	17·606			
	Mid.-zinc-lead rerun of No. 4	20·50	16·60	34·45	11·51	3·403	7·062	2·360			
	Mid.-zinc-lead rerun of No. 3	4·00	23·85	25·60	16·44	0·954	1·024	0·658			
	Mid.-zinc-lead rerun of Nos. 1 & 2	9·00	26·05	23·19	15·19	2·344	2·087	1·391			
	Totals	147·50	13·56	32·66	17·89	20·007	48·171	26·395	21·7	75·8	72·3

MIDDLINGS PRODUCT.

4 per cent by weight, approx.	Ring No. 4 Rerun No. 1.....	11·00	43·35	12·97	4·66	4·768	1·427	0·513	5·2	2·2	1·4

SLIME LOSS.

Slime loss represents 12 per cent by weight approx. of original ore.	Slime loss first separation. ..	20·00	20·40	38·72	17·56	4·087	7·714	3·513	.....	.....	
	Slime loss rerun of No. 4.....	7·50	14·28	30·09	21·67	1·071	2·257	1·625	.....	.....	
	Slime loss rerun of No. 3.....	2·50	28·28	14·88	14·48	0·707	0·372	0·362	.....	.....	
	Slime loss rerun of Nos. 1 & 2	5·00	31·74	24·52	23·42	1·587	1·226	1·171	.....	.....	
	Totals.....	35·00	21·29	33·14	19·06	7·452	11·599	6·671	8·1	18·3	18·3

Ottawa, April 15, 1919.

Test No. 112.

A shipment of 11 bags of scheelite concentrates was received on January 9, 1919, at the testing plant of the Ore Dressing and Metallurgical Division, from Frank Cantin, Esq., Mayo Landing, Yukon territory.

The concentrates were shipped from Mayo Landing and had been produced by placer mining. They contained, besides the scheelite, a certain amount of gold, this being in the form of metallic flakes of fair size.

A mill test was desired, to ascertain if the gold could be recovered from the scheelite concentrates by an economical process.

Gross weight of concentrates	1,405 pounds.
Net weight of concentrates	1,393 "
Head sample	3 "
Net weight after sampling	1,390 "
Moisture, at 0·32%	5 "
Net weight of dry concentrates after sampling	1,385 "
Analysis—WO_3	65·70 per cent.
Au	2·40 oz. per ton.
Content—WO_3	909·94 pounds.
Au	1·66 oz.

The concentrates were crushed and screened on 35 mesh until only metallics were left as the oversize. These metallics were treated to recover the bullion in them, and the undersize was weighed and sampled for analysis.

Weight after screening	1,380 pounds.
Analysis—WO_3	65·90 per cent.
Au	1·10 oz. per ton
Content—WO_3	909·42 pounds.
Au	0·759 oz.
Bullion recovered by screening	1·220 "

The material, which had been crushed to pass 35 mesh, was put through an amalgamator and then over amalgamation plates, the flow from the plates being led to a long series of settling boxes so that the scheelite would settle out from the water used in the amalgamation. After the run, all the amalgam was collected from the plates and amalgamator and treated to recover the bullion in it. The scheelite in the settling boxes was also collected, dried, weighed and sampled.

Weight after amalgamation	1,318 pounds.
Analysis—WO_3	67·10 per cent.
Au	0·05 oz. per ton.
Content—WO_3	884·38 pounds.
Au	0·033 oz.
Bullion recovered by amalgamation	0·729 "

Figuring on the contents of the different products, we have the following percentages:—

Crushing and Screening—	
Loss of scheelite values	0·06 per cent.
Recovery of gold values, in metallics	54·3 "
Amalgamation—	
Loss of scheelite values	2·75 per cent.
Recovery of gold values, in amalgam	43·7 "
Summary—	
Total loss of scheelite values	2·81 per cent.
Total recovery of gold values	98·0 "
Bullion recovered in metallics by screening	1·220 oz.
Bullion recovered in amalgam	0·729 "
Total bullion recovered	1·949 "

Conclusions.—

1. The value of the gold recovered from a ton of concentrates would be $48.62, and the value of the scheelite (figured at $15 a unit of tungsten trioxide) lost in treating a ton of concentrates would be $24.73, so that there is a balance of $23.89.

2. The scheelite loss would be cut down by the use of better methods to dewater and collect the scheelite after amalgamation.

3. The 98 per cent recovery of the gold values is very good. This shows that the gold is very adaptable to amalgamation.

Ottawa, April 28, 1919.

Test No. 113.

A carload of graphite ore, weighing 60,272 pounds, was received January 27, 1919, at the testing plant of the Ore Dressing and Metallurgical Division, from Robt. Bryce, Toronto, Ont. The ore was from Low township, Quebec, and consisted of flake graphite in a gangue of quartz, calcite, and feldspar.

The shipment, as received, was made up of three lots of different grades, and hand-picking, tabling and flotation tests were desired on these lots for the separation of the graphite from the gangue minerals.

Lot No. 1 (high grade)—	
Net weight	3,306 pounds.
Moisture at 3·31%	110 "
Dry weight	3,196 pounds.
Analysis—C	38·18 per cent.
Content—C	1,220·23 pounds.
Lot No. 2 (medium grade)—	
Net weight	8,092 pounds.
Moisture at 3·67%	297 "
Dry weight	7,795 pounds.
Analysis	18·10 per cent.
Content—C	1,410·89 pounds.
Lot No. 3 (low grade)—	
Net weight	48,874 pounds.
Moisture at 1·554%	760 "
Dry weight	48,114 pounds.
Analysis—C	4·325 per cent.
Content—C	2,080·93 pounds.

Lot No. 1 was crushed in a breaker and rolls to 1 inch and screened on ¾-inch and ½-inch. The oversize from the screening was hand-picked. The discard from the picking and the ½-inch size was crushed to pass ¾-inch and added in with the first ¾-inch size, and the whole lot tabled on a Wilfley table, oil being mixed with the ore before being fed to the table, and a number of air sprays being allowed to play on the surface of the table to assist the graphite flakes to rise to the surface of the water and float away. The hand-picked flake and the concentrate from the table were sampled for analysis with the following results:—

Hand-picked flake—C	79·20 per cent.
Concentrates from table—C	77·10 "

The object of the above work was to determine if a coarse flake could be produced in this manner, having a high carbon content without reducing it to a size suitable for flotation.

Lot No. 3, being the low grade ore, was treated first, the method of concentration applied being the Callow pneumatic flotation process. It was ground wet in a

Hardinge mill, using cast-iron balls for grinding. The discharge of the mill was run through a launder classifier and oversize returned to the mill, the undersize, which would be approximately 30 mesh material, was concentrated in the flotation cells. This produced a first concentrate with an analysis of 71·60 per cent carbon. Considerable difficulty was experienced in obtaining a good froth, various combinations of oil mixtures being tried to determine a suitable one for this low grade material. This resulted in a high tailing and therefore poor recovery before the proper working conditions were obtained.

Lot No. 2 and the table tailing from lot No. 1 were next run through the flotation circuit and a first concentrate obtained on this material with an analysis of approximately 80 per cent carbon. A good froth was obtained and the tailings on this higher grade material were much lower than on the low grade of lot No. 3.

The first concentrates from lot No. 3 on examination were found to include much attached graphite adhering to the gangue, so that this was recleaned by grinding in the Hardinge mill using pebbles and refloating. This second concentrate approached a grade of 80 per cent carbon.

The second concentrates from lot No. 3, the first concentrate from lots Nos. 2 and 1, and the hand-picked flake together with the table concentrates from lot No. 1, were run through the circuit in order to collect the whole in one lot, and a final concentrate produced which was dried, sized in a Keedy sizer, and the weights and analyses determined as follows:—

Size.	Weight.	C. %.	C. Content.
−·0410″+·0145″	683	95·05	649·19
+·0116″	625	91·20	570·00
+·0089″	169	89·75	151·68
+·0068″	637	90·30	575·21
+·0054″	611	87·40	534·01
+·0041″	362	88·60	320·73
+·0036″	363	87·10	316·17
+·0026″	116	85·20	98·83
+·0023″	452	85·05	384·43
Total	4,018	89·60	3,600·25

The recovery is 76·41 per cent and the grade of concentrate is 89·60 per cent.

Conclusions—

1. Hand-picking and tabling might be feasible from a metallurgical viewpoint in the concentration of an ore of this class. Commercially we are of the opinion they should not be resorted to.

2. In the operation of the flotation cells, poor results were obtained on lot 3, the low grade ore. This was due to a number of causes: experimental work in obtaining the oil mixture suitable, and the proper manipulation of the cells; the graphite flake did not seem to free readily from its gangue unless fine crushing was resorted to; the percentage of graphite in the ore being low, too much oil had to be used to oil the flake, the excess having a detrimental effect on the frothing action of the cells. This trouble was not experienced on the higher grade ores and a much higher recovery of graphite would have been made had the three lots been mixed, giving a feed of 7·97 per cent carbon.

3. Considerable loss can be accounted for in the handling and step treatment which had to be resorted to in conducting the test.

4. Small scale tests conducted on the ore gave remarkable results both as to grade of concentrates and recovery.

5. The grades of concentrates given in the above table are marketable and commercial ones on which the highest price should be obtained.

6. In practice with a mill designed for the purpose, using the Callow system of flotation concentration, in which handling losses were reduced to a minimum, concentrates of the above grade should be obtained with a recovery of from 90 per cent to 95 per cent of the carbon values.

Ottawa, February 28, 1919.

Test No. 114.

Two bags of approximately 200 pounds of magnetic fines were received on February 10, 1919, from the Poe Mining Company, Clarendon station, Ont.

These fines were from their dry separator system, and a separation test was desired on the wet Grondal magnetic separator, to be treated in the state received.

On examination, however, it was found that they contained coarse pieces of ore and considerable material coarser than 20 mesh. This coarse material could not be treated in the Grondal wet unit, so it was necessary to screen on 20 mesh and crush the oversize down so that the total material passed through this screen. A sample was then cut out for analysis, which gave the following:—

Iron—Fe	27·90 per cent.
Silica—SiO_2	17·87 "
Phosphorus—P	trace.

The material through 20 mesh was separated in the wet Grondal unit in a magnetic field with a current density of 6·5 amperes × 110 volts on the rougher drum magnets and 5 amperes × 110 volts on the cleaner drum magnets. Two products were made, a magnetic concentrate from the cleaner drum and a tailing from both rougher and cleaner drums. These products were dried, weighed, and sampled, the results being as follows:—

Magnetic Concentrates	60 pounds.
Analyses—Iron, Fe	69·40 per cent.
Silica, SiO_2	1·39 "
Phosphorus, P	none.
Tailings	78 pounds.
Analysis—Iron, Fe	1·92 per cent.

Summary and conclusions.—In conducting this small test, tubs and overflow boxes were used to catch the products. On account of the large quantity of water passing through the machine and these boxes, especially with the tailings, the loss in slime overflow was very large; besides there would be the loss in handling such small quantities, so that no accurate recoveries can be calculated.

The recovery is between 80 per cent and 90 per cent of the total iron content in the form of a high grade concentrate with an analysis of Fe, 69·40 per cent; SiO_2, 1·39 per cent; P, none.

Ottawa, April 3, 1919.

Test No. 115.

A shipment of four bags, shipping weight 300 pounds, of fluorite, calcite, and barite was received on February 12, 1919, from Gavin M. Wallbridge, manager of the Wallbridge mine, Madoc, Ont. The shipment had been taken from a vein on the west half of lot 1, concession I, Madoc township, county of Hastings, Ont.

The shipment consisted of a natural mixture of fluorite, calcite, and barite, the individual grains of mineral ranging in size from about 1½ inch to very small crystals, and a separation of the three minerals from each other was desired.

The following table shows the weighing in of the shipment:—

Gross weight	292 lbs.
Weight of 4 bags	5 "
Net weight	287 "
2 specimens	7 "
Remainder	280 "

This remainder of 280 pounds was crushed to pass ¼ inch and a combined moisture and head sample taken out for analysis. This sample gave the following results:—

Moisture	4·00 per cent of the wet ore.
Barite ($BaSO_4$)	4·40 per cent of the dry ore.
Fluorite (CaF_2)	48·35 per cent of the dry ore.
Calcite ($CaCO_3$)	40·00 per cent of the dry ore.
Silica (SiO_2)	3·10 per cent of the dry ore.
Alumina and iron oxide	1·60 per cent of the dry ore.

As a preliminary test, 17 pounds of the ore was dried and crushed to pass 20 mesh, and then run over the small laboratory Wilfley table. This test gave a very poor separation, due to the great range in size of the material.

The products of the above test were dried, mixed, and screened on 30, 40, and 50 mesh. This produced four sizes of material, and all these sizes were run over the small table separately. In each case, a good separation of the barite from the fluorite and calcite was effected, and a somewhat fair separation of the fluorite from the calcite.

From the results of the preliminary tests, it was decided to crush all the ore to pass 20 mesh and screen on 35 and 80, and to run each size separately over the large Wilfley table.

The main lot of ore was dried and crushed to pass 20 mesh, and the products from the preliminary tests were dried and added in. Screening on 35 and 80 mesh was then done, and each lot was sampled for analysis and weighed. The lots were then run separately over the large Wilfley table, making a barite, fluorite, and calcite product, and where it was deemed advisable these products were re-run over the table and split into a head and a tail. All the products were dried, weighed, and sampled for analysis.

The weights, analyses, and results of the final test are tabulated in the accompanying table.

Conclusions—

1. To effect a good separation and obtain good products the ore will have to be ground to about 80 mesh.

2. The slime loss in the separation of the —80 product is very heavy, due to two causes; the poor design of the boxes used to catch the products from the table, and the dry crushing to pass 20 mesh and screening on 35 and 80, all the slimes produced going either into the —80 material, or into the air as dust. With the use of a wet ball mill to grind all the ore to be separated on the table to —80 mesh less slimes would result, and nothing would be lost as dust. If tanks were used to catch and dewater the products from the table there would result a further saving, although this would be mostly in calcite, it being the mineral which shows the greatest tendency to slime.

3. If the slime loss could be kept down to 10 per cent, then, using the data from the treatment of the —80 mesh product, there would result the following recoveries and grades of products:—

Mineral.	Recovery per cent.	Grade per cent.
Barite	75·5	81·85
Fluorite	65·2	74·8
Calcite	63·7	59·20

4. On tabling the ore less material could be taken off as the fluorite product, and this would give a better grade of fluorite, but the recovery would be lowered.

5. The original ore is rather low in barite, and Mr. Wallbridge is of the opinion that the average run would be much higher. If this is so, there would result a much better grade of barite from the separation.

SEPARATION OF −20+35 PRODUCT.

Product.	Weight Lbs.	Analysis.			Content.			Percentages.		
		$BaSO_4$	CaF_2	$CaCO_3$	$BaSO_4$	CaF_2	$CaCO_3$	$BaSO_4$	CaF_2	$CaCO_3$
Barite heads	3·0	36·40	50·60	6·40	1·09	1·52	0·19			
Barite tails	4·0	6·60	77·20	10·90	0·26	3·09	0·44			
Fluorite	47·0	0·90	64·20	27·60	0·42	30·17	12·97			
Calcite	34·0	0·04	27·90	60·00	0·01	9·49	20·40			
Slime loss	0·5				0·79	1·44	0·16			
Totals	88·5	2·90	51·65	38·60	2·57	45·71	34·16			

SEPARATION OF −35+80 PRODUCT.

Barite heads	2·0	75·10	20·00	2·36	1·50	0·40	0·05			
Barite tails	1·5	52·25	37·20	5·08	0·78	0·56	0·08			
Fluorite	20·5	2·60	75·10	18·50	0·53	15·40	3·79			
Calcite heads	50·0	0·20	52·20	42·20	0·10	26·10	21·10			
Calcite tails	17·0	0·00	16·10	73·60	0·00	2·74	12·51			
Slime loss	0·5				0·66	−0·46	0·03			
Totals	91·5	3·90	48·90	41·05	3·57	44·74	37·56			

SEPARATION OF −80 PRODUCT.

Barite	3·5	81·85	12·64	2·25	2·86	0·41	0·08	56·4	1·1	0·2
Fluorite	11·0	6·60	82·00	7·15	0·73	9·02	0·79	14·4	22·5	2·2
Calcite heads	13·0	0·00	68·60	27·70	0·00	8·92	3·60	0·0	22·2	10·0
Calcite tails	21·0	0·00	33·90	59·20	0·00	7·12	12·43	0·0	17·7	34·7
Slime loss	39·0	3·79	37·59	48·61	1·48	14·66	18·97	29·2	36·5	52·9
Totals	87·5	5·80	45·90	41·00	5·07	40·16	35·87	100·0	100·0	100·0

Ottawa, March 6, 1919.

Test No. 116.

A shipment of two bags of about 120 pounds of rock carrying molybdenite was received on February 24, 1919, from G. F. Creaghan, Esq., Kent street, Ottawa. These samples were from lot No. 4, range I, Egan township, Wright county, Quebec.

The molybdenite was of the flake variety, fairly small and disseminated through the rock, which was composed of quartzite and pyroxenite. Iron pyrites were also present.

The whole shipment was crushed, and a sample prepared for analysis which gave the following:—

Molybdenite—MoS_2	0·25 per cent.

A small flotation test was made on a portion crushed to 40 mesh, the tailings from which were sampled for analysis and which gave the following:—

Molybdenite—MoS_2	0·07 per cent.

Summary and conclusions.—Under present conditions the above grade would not be classed as an ore. The flotation test conducted on it showed that the molybdenite could be concentrated from the gangue material very readily. The recovery, calculated from the analysis of the crude ore and tailings, is 72 per cent of the molybdenite values, which is a fair recovery on such low grade material.

Ottawa, April 17, 1919

Test No. 117.

A sample of silica rock, weighing 300 pounds (3 bags) was received March 9, 1919, at the testing plant of the Ore Dressing and Metallurgical Division, from Stinson-Reeb Builders Supply Co., Ltd., Montreal, Que.

The sample consisted of a white siliceous rock ranging in size from about 2 inches to fine dust.

A washing test was desired on this material to see if it would be possible to produce a good grade of glass sand.

The whole sample was dried and screened on 12 mesh, the oversize being crushed in rolls and screened alternately until it all passed through the screens. A sample for analysis was then cut out by means of a Jones riffle. This gave the following:—

Silica	96·76 per cent.
Alumina	0·62 "
Ferric oxide	0·86 "
Lime	1·32 "
Magnesia	0·37 "
Loss on ignition	0·94 "

After sampling, the remainder of the material through 12 mesh, was weighed, and washed in a Richard's classifier. The washed material was dried and screened on 20-and 100-mesh screens, the three products from the screens being weighed separately. The following table shows the weights of the heads and different products of the above washing and screening test:—

Product.	Weight, Lbs.	Per cent by weight.
+20 mesh	13·0	5·9
−20+100 mesh	171·5	77·8
−100 mesh	13·0	5·9
Washings	23·0	10·4
Heads	220·5	100·0

The — 20 + 100-mesh material was sampled for analysis with the following results:—

Silica	99·50 per cent.
Alumina	0·06 "
Ferric oxide	0·22 "
Lime	0·22 "
Magnesia	none
Loss on ignition	0·32 "

Thinking that better results might be obtained by washing the silica rock in a more vigorous manner, six pounds of the — 20 + 100 product were washed in one-pound charges in the impeller compartment of a Janney flotation machine. Each charge was washed for twenty minutes in the machine, then withdrawn, the dis-

coloured water poured off, and clear water added and decanted until no discolour remained. The six charges were combined, dried, weighed (5·33 pounds), and sampled for analysis. The sample gave the following:—

Silica	99·70 per cent.
Alumina	0·03 "
Ferric oxide	trace
Lime	0·12 "
Magnesia	0·12 "
Loss on ignition	0·18 "

Four pounds of the —20 + 100-mesh material were put through an oil flotation process in the Janney machine in one-pound charges. Each charge was mixed with the required amount of oil in a small pebble mill for five minutes, and then treated in the flotation machine for twenty minutes, the charge being then withdrawn and the discoloured water being removed in the same manner as in the previous test. The combined four charges were dried, weighed (3·55 pounds), and sampled for analysis. The sample gave the following:—

Silica	99·70 per cent.
Alumina	0·04 "
Ferric oxide	0·15 "
Lime	trace
Magnesia	0·05 "
Loss on ignition	0·16 "

Conclusions.—

1. By the use of a log washer a product similar to that produced by washing the silica rock in the impeller compartment of a Janney machine would be obtained, and this product would be a very good glass sand.

2. The analysis of the material treated by the flotation process shows ferric oxide 0·15 per cent. This is rust from the drying pans, and in reality this product would only run a trace of ferric oxide. It will be seen then that flotation leaves the alumina, ferric oxide, and loss on ignition about the same, lowers the lime and magnesia, and thereby slightly increases the silica. A slightly better grade of sand might be produced by flotation, but the extra cost of production would hardly warrant it.

3. The analyses for magnesia in the different products do not check closely. This is due to the difficulty of the determination, especially when very small amounts are present.

Ottawa, December 27, 1919.

Test No. 118.

A shipment of 1,000 pounds each of copper-nickel ore and slag was received from Sudbury, Ont. This shipment was made by the Nien-Steel Corporation, Toronto, Ont.

Both lots were crushed to 20 mesh and sampled, giving the following analyses:—

		Ore.	Slag.
Iron	Fe	50·10 per cent.	29·60 per cent.
Copper	Cu	0·60 "	0·27 "
Nickel	Ni	3·00 "	0·28 "
Silica	SiO_2	10·00 "	36·25 "
Sulphur	S	32·20 "	0·45 "
Sulphur trioxide	S	....	Trace
Alumina	Al_2O_3	2·10 "	10·05 "
Lime	CaO	0·20 "	3·95 "
Magnesia	MgO	0·20 "	6·80 "

The object of the test work was to produce a sinter suitable for blast furnace use for conversion into pig from which copper-nickel steel could be obtained.

The first series of tests consisted of mixing the crushed ore and slag in the proportions of 40 : 60 and 30 : 70 with varying percentages of charcoal and 7·5 per cent water, and sintering 50-pound charges of the mixture. The sinter obtained

showed that the sulphur was reduced to 2·5 per cent; this, however, was too high. By regrinding and a second sintering the required results might be obtained.

A second series of tests were run by first roasting to about 12 per cent sulphur and then mixing the roast ore and slag in the proportion of 50 : 50 with varying percentages of charcoal and 7·5 per cent water. The sinter obtained showed the sulphur to be reduced to about 0·75 per cent.

A third series of tests were run by first roasting to about 5 per cent sulphur, and then mixing the roast ore and slag in the proportion of 50 : 50, with varying percentages of charcoal and 7·5 per cent water. The sinter obtained showed the sulphur to be reduced to about 0·5 per cent, which would be quite within the range for blast furnace use.

A fourth series of tests were run by first roasting the ore to about 0·75 per cent sulphur and then mixing as before. The sinter obtained from these tests showed the sulphur content reduced to about 0·35 per cent.

Test work is being continued on this problem, but from the work already performed it seems feasible that a good sinter, suitable for blast furnace work, can be obtained by first reducing the sulphur in the ore to about 5 per cent and then mixing with the slag in the proportion of 50 : 50, and sintering.

It is also probable that a suitable blast furnace feed can be obtained by sintering twice or thrice without roasting, after mixing the ore and slag in the proper proportions.

The actual results of the test runs will be contained in a subsequent report when the work is completed.

Ottawa, April 8, 1919.

Test No. 119.

Six small samples of scheelite were received on March 22, 1919, at the testing plant of the Ore Dressing and Metallurgical Division, from G. B. Mackenzie, gold commissioner of the Yukon territories, Dawson city. These samples had been taken from the Bum Boy and Cairnes claims, Dublin Gulch.

Four of the samples, Nos. 1, 2, 4, and 5, were of scheelite ore as mined, and the remaining two, which had lost their numbers in transit, were of scheelite panned from the original ore.

Analyses on all the six samples for tungsten trioxide (WO_3) were desired, besides a small concentration test on the four original ore samples. It was decided also at the testing plant to assay some of the samples for gold.

Analyses—

Sample.	WO_3 per cent.	Au.oz. per ton.
No. 1	10·00	
No. 2	20·00	
No. 4	9·20	
No. 5	4·30	nil.
Large panned	63·40	nil.
Small panned	61·30	

For the concentration test the remainders of samples Nos. 1, 2, 4, and 5, after crushing to pass 20 mesh, and the removal of a small portion for analysis, were combined and run over a small laboratory Wilfley table, making a concentrate, a middling, and a tailing. The three products were dried, weighed and sampled for analysis. The following table shows the weights, analyses and results of this test:—

Product.	Wt. gms.	Per cent. WO_3.	Content, gms. WO_3.	Percentages WO_3.
Concentrate	783	67·50	528·52	84·4
Middlings	291	1 40	4 07	·6
Tailings	2,603	1·70	44·25	7·1
Slime loss	930	5·35	49·71	7·9
Heads	4,607	13 60	626·55	100 0

Conclusions.—

1. The amount of material used for this test being very small (10 pounds), and the table upon which the test was made being only a laboratory model of the standard Wilfley table, the results obtained cannot be considered as being at all accurate.

2. Results by treating the ore on a large table would certainly be much better both in regard to per cent recovery and grade of concentrate.

3. The test indicates that the ore should be ground finer than 20 mesh to free all the scheelite.

4. If the grinding of the ore were done in ball mills much less slime would be produced and better results would be obtained.

5. During the test it was observed that the scheelite had a decided tendency to form a white scum and float away out of the tailing box. This partially explains the heavy slime loss of 20·2 per cent by weight of ore concentrates running 5·35 per cent WO_3, and suggests the use of flotation to treat the tailings from the concentration on tables.

6. Owing to the remoteness of the region in which this scheelite ore is mined, and in which it is desired to concentrate it, it might be deemed inadvisable to bring in any heavy machinery to treat the ore, and that treating the ore in sluice boxes would give the best monetary return. Whether this is so or not depends almost entirely on the size of the ore bodies, and their scheelite content, but we think that an ore body would have to be very small in order to make it not worth while to put in at least a small installation, consisting of a crusher, ball mill, and tables.

Ottawa, May 14, 1919.

Test No. 120.

(*Preliminary Report.*)

A shipment of pyrite ore weighing 10 tons was received April 1, 1919, at the testing plant of the Ore Dressing and Metallurgical Division, from the Grasselli Chemical Co., Ltd., Cleveland, Ohio. The ore was from the Caldwell mine, Flower Station, Ont., and consisted of iron pyrites in a quartzitic gangue.

A concentration test was desired on this ore to produce a product running 40 per cent sulphur or over, and to obtain as high a recovery as possible.

Half of the shipment was put through a breaker, crushing to a little over 2 inches, and then through rolls set at 2 inches. A head sample was cut out by an automatic sampler and the remainder of the ore was screened on ¼-inch and ½-inch screens, the oversize being passed to a picking belt, where it was washed by passing under a spray, and the high grade material picked out. The slime from washing the ore on the belt was collected and dried, and the discard from the belt and the 1½-inch size were crushed in rolls to pass ¼ inch. All the products were then weighed, and sampled for analysis.

The discard from the belt and the ¼-inch and 1½-inch sizes were jigged separately. The tailings from jigging the 1½-inch size being high in the pyrite after the first jigging, they were re-run through the jig. All the concentrates and the hutch products from the jigging were dried, weighed, and sampled for analysis. The tailings were sampled wet.

The tailings from the jigging were mixed, ground in a Hardinge mill, and separated in a launder classifier into sand and slime. The slime was sampled and pumped to waste, and the sand was tabled on a Wilfley table. A pyrite concentrate and a tailing were made. The tailing was sampled and pumped to waste and the concentrate was dried, weighed, and sampled.

The data obtained from the above test are given in the following tables:—

PYRITE.

Screening and Picking.

Product.	Weight Lbs.	Moisture %.	Moisture Lbs.	Dry Weight Lbs	S %.	S. Lbs.	% Total S. Value.	% Total Wt.
−¼"	2193	1·08	23·7	2169·3	38·15	827·59	28·08	25·60
+¼"−1½"	2775	0·31	8·6	2766·4	35·28	975·99	33·11	32·65
Picked	1103	0·28	3·1	1099·9	43·89	482·75	16·38	12·98
Discard	2453	0·83	20·4	2432·6	27·11	659·48	22·37	28·71
Slime	5·5	0·00	0·0	5·5	30·04	1·65	0·06	·0·06
Total	8529·5			8473·7	34·78	2947·46	100·00	100·00
Head sample	982	0·45	4·4	977·6	36·05			
To breaker	9630	0·45	43·3	9586·7	36·05			

Jigging 1½" Product.

1st No. 1 conc				360·5	48·89	176·25	6·10	4·36
1st No. 2 conc				91·0	43·11	39·23	1·36	1·10
1st No. 1 hutch				46·0	51·14	23·52	·82	·56
1st No. 2 hutch				53·5	49·58	26·53	·92	·65
2nd No. 1 conc				168·0	50·00	84·00	2·91	2·03
2nd No. 2 conc				126·0	47·75	60·16	2·08	1·52
2nd No. 1 hutch				88·0	51·85	45·63	1·58	1·06
2nd No. 2 hutch				80·0	51·70	41·36	1·43	·97
Tails				1685·9	27·25	459·41	15·91	20·40
Total				2698·9	35·43	956·09	33·11	32·65

Jigging Picking Belt Discard.

No. 1 conc				294·0	49·05	144·21	4·53	3·47
No. 2 conc				144·0	46·80	67·39	2·11	1·70
No. 1 hutch				148·0	51·65	76·44	2·40	1·75
No. 2 hutch				69·0	51·40	35·47	1·11	·81
Tails				1777·6	21·90	389·29	12·22	20·98
Total				2432·6	29·30	712·80	22·37	28·71

Jigging ¼" Product.

No. 1 conc.				473·0	49·50	239·13	7·65	5·58
No. 2 conc.				270·0	44·75	120·82	3·95	3·19
No. 1 hutch				95·5	51·70	49·37	1·61	1·13
No. 2 hutch				335·0	51·75	173·36	5·66	3·95
Tails				995·8	28·30	281·81	9·21	11·75
Total				2169·3	39·62	859·49	28·08	25·60
Jig beds				67·5	41·85			

Tabling Tails from Jigging.

Conc.	1007·0	1·84	18·5	988·5	49·85	492·77	16·28	11·78
Slimes				2493·1	23·60	588·37	19·43	29·70
Tails				977·7	5·05	49·37	1·63	11·65
Totals				4459·3	25·35	1130·51	37·34	53·13

PYRITE.

SUMMARY.

Product.	Per cent by Weight.	S. per cent	Per cent Wt. × per cent S.	Per cent S. Value.	Per cent by Weight	S. per cent	Per cent S. Value.
HAND-PICKED	12·98	43·89	569·69	15·90			
¼" No. 1 conc.	5·58	49·50	276·21				
¼" No. 2 conc.	3·19	44·75	142·75				
1½" 1st No. 1 conc.	4·36	48·89	213·16				
1½" 1st No. 2 conc.	1·10	43·11	47·42				
1½" 2nd No. 1 conc.	2·03	50·00	101·50				
1½" 2nd No. 2 conc.	1·52	47·75	72·58				
Discard No. 1 conc.	3·47	49·05	170·20				
Discard No. 2 conc.	1·70	46·80	79·56				
CONCENTRATES	22·95	48·08	1,102·38	30·79	46·81	47·72	62·34
¼" No. 1 hutch	1·13	51·70	58·42				
¼" No. 2 hutch	3·95	51·75	204·41				
1½" 1st No. 1 hutch	·56	51·14	28·64				
1½" 1st No. 2 hutch	·65	49·58	32·23				
1½" 2nd No. 1 hutch	1·06	51·85	54·96				
1½" 2nd No. 2 hutch	·97	51·70	50·15				
Discard No. 1 hutch	1·75	51·65	90·39				
Discard No. 2 hutch	·81	51·40	41·63				
HUTCHES	10·88	51·55	560·83	15·65			
¼" tails	11·75	28·30	332·52				
1½" tails	20·40	27·25	555·90				
Discard tails	20·98	21·90	459·46		53·19	25·37	37·66
TAILS	53·13	25·37	1,347·88	37·61			
Belt slime	·06	30·04	1·80	0 05			
Total	100·00	35·84	3,583·58				

Conclusions.

1. Figuring on the hand-picked and the jig concentrate and hutches, we have a recovery of 62·34 per cent of the sulphur values in a product 47·72 per cent sulphur.

2. The grade of concentrate produced is very good.

3. The recovery is low.

4. Further testing will be carried out with an endeavour to substantially increase the recovery by producing a lower grade of concentrate.

5. By tabling the recovery is increased by 16·28 per cent but the additional concentrate recovered is fine and hence not very desirable.

Ottawa, May 28, 1919.

Test No. 120.

(*Final Report*).

A shipment of pyrite ore weighing 10 tons was received April 1, 1919, at the testing plant of the Ore Dressing and Metallurgical Division, from the Grasseli Chemical Company, Limited, Cleveland, Ohio. The ore was from the Caldwell mine, Flower Station, Ont., and consisted of iron pyrites in a quartz gangue.

A concentration test was desired on this ore to produce a product running 40 per cent sulphur or over, and to obtain as high a recovery as possible.

A test was made upon one-half of the shipment, and a preliminary report, describing this test, and giving the data obtained from it, was submitted.

In the first test, the grade of concentrate was high and the recovery low. With the idea of increasing the recovery by producing a lower grade of concentrate, the following test was made:—

One-fourth of the shipment was put through a breaker crushing to a little over 2 inches, and then through rolls set at 2 inches. A head sample was cut out by an automatic sampler, and the remainder of the ore was screened on ¾-inch and 1½-inch screens, the oversize being passed to a picking belt, where it was washed by passing under a spray, and the high grade material picked out. The slime from washing the ore on the belt was collected and dried, and the discard from the belt and the 1½-inch size were crushed in rolls to pass ¾-inch. The hand-picked material was weighed and sampled. The belt discard and 1½-inch size, after being reduced to ¾-inch, were mixed with the slime from the picking belt, and the ¾-inch size, weighed, and sampled.

The mixed product was then jigged, making 2 concentrates, 2 hutches and a tailing, all of which were dried, weighed, and sampled. The weight and assay of the slime lost in jigging were figured by difference.

The data obtained from the above test are given in the following tables:—

PYRITE.

CRUSHING, SCREENING AND PICKING.

Product.	Wet Wt. Lbs.	Moisture.		Dry Wt. Lbs.	Sulphur %	Sulphur Lbs.	Per cent Total S. value	Per cent Total Wt.
		Per cent	Lbs.					
Hand-picked	979	0·13	1·3	977·7	40·75	398·41	26·60	23·30
Mixed	3,242	0·70	22·7	3,219·3	34·15	1,099·39	73·40	76·70
Total				4,197·0	35·69	1,497·80	100·00	100·00
Head sample	670	0·42	2·8	667·2	35·15			
Heads	4,910	0·42	20·6	4,889·4	35·15			

JIGGING.

No. 1 conc				703·5	46·01	323·68	21·62	16·77
No. 2 conc				140·0	33·42	46·79	3·12	3·34
No. 1 hutch				1,041·0	49·70	517·38	34·56	24·81
No. 2 hutch				98·0	36·93	36·19	2·42	2·34
Tails				1,095·0	12·45	136·33	9·11	26·10
Slimes				140·3	27·45	38·51	2·57	3·34
Total	3,240·5	0·70	22·7	3,217·8	34·15	1,098·88	73·40	76·70

SUMMARY.

Product.	Per cent Total S. Value.	Per cent Total Weight.	Sulphur %	Per cent Fines —20 mesh.
Hand-picked	26·60	23·30	40·75	0·00
No. 1 conc	21·62	16·77	46·01	0·00
No. 2 conc	3·12	3·34	33·42	0·00
No. 1 hutch	34·56	24·81	49·70	40·29
No. 2 hutch	2·42	2·34	36·93	70·40
Total conc	88·32	70·56	44·67	16·50
Tails	9·11	26·10	12·45	
Slimes	2·57	3·34	27·45	
Total tails	11·68	29·44	14·16	

Conclusions.

1. The grade of concentrate produced, 44·67 per cent sulphur, is good.
2. The recovery 88·32 per cent is very good.
3. The rate of concentration is as 10 is to 7.
4. The fines under 20 mesh are 16·50 per cent of the combined concentrates. This is rather high, but by crushing in stages, and picking and jigging the ore in slightly larger sizes, this would be kept down to 10 per cent, which would be fair.

Ottawa, July 10, 1919.

Test No. 121.

A shipment of manganese ore weighing 2,000 pounds was received April 9, 1919, at the testing plant of the Ore Dressing and Metallurgical Division, from A. A. Hassan, 120 Broadway, New York, N.Y. The ore was from the Tenecape manganese mine, Kenneteooke station, Nova Scotia, and consisted mainly of pyrolusite in a gangue of calcite.

A concentration test was desired on this ore to produce a product running 48 per cent manganese or over, and to obtain as high a recovery as possible.

The ore was in two lots, a low grade lot from the mine called lot No. 1, and a higher grade lot from the mine dumps called lot No. 2. Both lots were weighed and crushed to ¼ inch. Lot No. 1 weighed 1,193 pounds, and lot No. 2 weighed 774 pounds. By means of a Jones sampler 66 pounds were cut out of lot No. 1 and 45 pounds out of lot No. 2, each quantity crushed to —30 mesh, and a small head sample taken out for analysis. This gave the following:—

	Lot No. 1. %	Lot No. 2. %
Moisture	2·22	2·79
Manganese	11·73	20·34
Iron	2·95	2·65
Silica	3·35	3·15
Phosphorus	·70	·025

Test No. 1.

By means of a Jones sampler, 7,117 grams of lot No. 1 and 4,871 grams of lot No. 2 were cut out of the —30 mesh material. These quantities were screened on 40 and 50 mesh making 3 sizes in each lot. All these sizes were weighed and run separately over a small Wilfley table, making a concentrate, a middling, and a tailing. These products were caught in settling boxes, and the overflow from the boxes was run to a tank where the slime was allowed to settle out. The settling boxes were cleaned after running each lot and the slime tank was cleaned only after running all the lots. All the products from the tabling were dried, weighed, and sampled. The following table gives the data obtained from this first test:—

SMALL WILFLEY TABLE TEST.

Product.	Wt. Gms.	% Ma	Gms Ma.	% Recovery.
No. 1, −30+40 conc	179	24·95	44·66	
No. 1, −30+40 midd	260	17·59	45·73	
No. 1, −30+40 tails	1298	3·41	44·26	30·2
−30+40 slimes			13·40	
No. 1, −40+50 conc	175	34·45	60·29	
No. 1, −40+50 midd	180	15·59	28·06	
No. 1, −40+50 tails	981	4·15	40·71	36·1
−40+50 slimes			37·87	
No. 1, −50 conc	548	38·39	210·38	
No. 1, −50 midd	200	11·43	22·86	
No. 1, −50 tails	1774	6·24	110·70	37·3
−50 slimes			220·64	
No. 2, −30+40 conc	143	37·80	54·05	
No. 2, −30+40 midd	192	12·45	23·90	
No. 2, −30+40 tails	373	3·70	13·80	55·4
−30+40 slimes			5·89	
No. 2, −40+50 conc	216	39·80	85·97	
No. 2, −40+50 midd	180	13·65	24·57	
No. 2, −40+50 tails	450	4·95	22·27	61·3
−40+50 slimes			7·50	
No. 2, −50 conc	783	47·65	373·10	
No. 2, −50 midd	119	18·70	22·25	
No. 2, −50 tails	1290	9·70	125·13	52·7
−50 slimes			187·59	
No. 1 and No. 2 slimes	1322	19·52	258·05	
No. 1 and No. 2 loss	1325	16·21	214·84	
Totals	11988	15·23	1825·58	
No. 1	1812 gms.			
	1548 "			
	3757 "	7117	11·73	834·82
No. 2	741 "			
	888 "			
	3242 "	4871	20·34	990·76

Test No. 2.

A reserve portion of the ¼-inch size was cut out of each lot and the remainder of the ¼-inch size and the remainder of the 30 mesh size of each lot were added together to be used in Test No. 2. This gave the following weights for the test:—

Lot No. 1 . . . . . 1,003 pounds.
Lot No. 2 . . . . . 651 "

These amounts were dried, the weights after drying being:—

Lot No. 1 . . . . . 989·5 pounds.
Lot No. 2 . . . . . 642·5 "

Each lot of ore was then ground separately in a ball mill fitted with 40 mesh screens. The weights obtained from the mill were:—

Lot No. 1 . . . . . 964 pounds.
Lot No. 2 . . . . . 628 "

Each of these lots were sampled for chemical analysis and a 4-pound sample was taken from Lot No. 1 for screen analysis. The screen analysis gave:—

	Screen.	Wt. Cms.	%	Cumulative %
All passed	8			
Retained on	10	3	0·17	0·17
" "	14	6	0·34	0·51
" "	20	11	0·62	1·13
" "	28	135	7·60	8·73
" "	35	416	23·42	32·15
" "	48	200	11·26	43·41
" "	65	205	11·54	54·95
" "	100	184	10·36	65·31
" "	150	157	8·84	74·15
" "	200	130	7·32	81·47
Pass	200	329	18·53	
Totals		1,776	100·00	

Both lots were run over a large Wilfley table, making a concentrate, a middling, and a tailing. The middling was rerun, the resulting concentrate going in with the first concentrate, and the tailing with the first tailing. The overflow from the tailing settling box was pumped to a tank and the slime allowed to settle out. The tailings from each lot were separated in a launder classifier into sand and slime, the slime being run to the tank which had taken the overflow from the tailing settling box. The settling boxes were cleaned out after tabling each lot, and the slimes from each lot were allowed to collect together in the one tank. All the products except the slimes were dried. The middlings from both lots were screened on 40 mesh. The concentrates, the two sizes of middlings, and the tailings were then weighed and sampled. The concentrate from Lot No. 1 was screened on 40 mesh and the resulting sizes weighed and sampled.

The slime collected in the tank in the above operations was run onto the large Wilfley table and separated into a concentrate, a middling, and a tailing. The tailing was pumped to waste and the concentrate and middling were collected, and dried. The middling was weighed and sampled, and the concentrate was sized and each size weighed and sampled.

The following table shows the data and results obtained from this test:—

LARGE WILFLEY TABLE TEST ON LOT 1.

Product.	Weight Lbs.	Mn. %.	Mn. Lbs.	% Mn. Value.	% by Weight.
Concentrates—40 / Concentrates+40	101·5	39·10	39·686	36·10	10·57
Middlings—40	12·5	35·50	4·437	4·04	1·30
Middlings+40	15·5	22·20	3·441	3·13	1·62
Tailings	490·0	3·04	14·896	13·55	51·04
Slime	340·5	13·94	47·460	43·18	35·47
Heads	960·0	11·45	109·920	100·00	100·00

LARGE WILFLEY TABLE TEST ON LOT 2.

Concentrates	125·5	48·55	60·930	48·39	19·98
Middlings—40	20·0	49·15	9·830	7·81	3·19
Middlings+40	9·5	24·50	2·327	1·85	1·51
Tailings	253·0	4·80	12·144	9·64	40·29
Slimes	220·0	18·49	40·683	32·31	35·03
Heads	628·0	20·05	125·914	100·00	100·00

LARGE WILFLEY TABLE TEST ON SLIMES LOTS 1 AND 2.

Concentrates	10·5	41·22	4·328	4·91	1·87
Middlings	32·5	36·23	11·775	13·36	5·80
Tailings and loss	517·5	13·92	72·040	81·73	92·33
Total	560·5	15·73	88·143	100·00	100·00

SCREEN TEST ON CONCENTRATES LOT 1.

Size.					
−40	51·5	40·35	21·991		
+40	45·0	38·80	17·460		
Loss	2·0	11·75	·235		
Total	101·5	39·10	39·686		

SCREEN TEST ON CONCENTRATES FROM SLIMES.

Size.	Weight Gms.	Mn. %	Mn. Gms.
+35	146·	34·74	50·720
+48	104·	34·60	35·984
+65	81·	32·67	26·463
+100	84·	34·90	29·316
+150	126·	40·80	51·408
+200	138·	46·94	64·777
−200	415·	46·34	192·311
	1,094·	41·22	450·979

Test No. 3.

The reserve portion consisted of:—

Lot No. 1 . . . . . 140 pounds.
Lot No. 2 . . . . . 84·5 pounds.

This reserve was used for test No. 3. The ore of each lot was dried and crushed to pass 50 mesh, and then screened on 100. The different sizes of each lot were then sampled, weighed, and run separately over the large Wilfley table, making a concentrate, middling, and a tailing. The resulting products were collected, dried, and sampled.

The following tables show the data and the results from this test, the slimes being figured out by differences:—

LARGE WILFLEY TABLE TEST ON LOT 1 −50+100.

Product.	Weight Lbs.	Mn. per cent	Mn. Lbs.	Per cent Mn. Value.	Per cent by weight.
Concentrates	7·0	35·85	2·51	52·2	12·4
Middlings	·7	13·90	·10	2·1	1·2
Tailings	43·0	3·58	1·54	32·0	76·1
Slimes	5·8	11·38	·66	13·7	10·3
Heads	56·5	8·51	4·81	100·0	100 0

LARGE WILFLEY TABLE TEST ON LOT 1 —100.

Concentrates	12·5	40·60	5·07	46·4	15·7
Middlings	1·0	26·75	·27	2·5	1·3
Tailings	40·0	6·45	2·58	23·6	50·3
Slimes	26·0	11·58	3·01	27·5	32·7
Heads	79·5	13·75	10·93	100·0	100·0

LARGE WILFLEY TABLE TEST ON LOT 2 —50+100.

Concentrates	6·2	43·80	2·72	62·1	21·4
Middlings	1·0	19·60	·20	4·6	3·4
Tailings	18·5	4·25	·79	18·0	63·8
Slimes	3·3	20·30	·67	15·3	11·4
Heads	29·0	15·10	4·38	100·0	100·0

LARGE WILFLEY TABLE TEST ON LOT 2 —100.

Concentrates	14·0	49·08	6·87	54·0	25·5
Middlings	1·0	27·18	·27	2·1	1·8
Tailings	22·5	1·05	·24	1·9	40·9
Slimes	17·5	30·58	5·35	42·0	31·8
Heads	55·0	23·15	12·73	100·0	100·0

Conclusions.

1. The results of the tests show that the recovery of the manganese values in the ores are low. A number of manganese ores from the Maritime Provinces have been received for test purposes in carload lots and smaller lots, and in all cases gravity concentration has shown a low recovery of the manganese values.

2. The grade of concentrates produced on this particular ore is low and could only be used for metallurgical purposes. A small quantity of high grade concentrates suitable for chemical purposes could be cut out, but the grade of the remaining concentrate would be lowered.

3. Recoveries and grade of concentrates obtained depend on the grade of the ore. The higher the grade the better recovery and grade of concentrate. This holds good on all the manganese ores tested from the Maritime Provinces. There is a slight difference in some cases in the crystallization of the pyrolusite. The finer the crystallization, the finer the grinding necessary and therefore the greater loss in slimes.

4. High recoveries and high grade products can be obtained from manganese ores by wet chemical methods and precipitation by electrolysis, but these methods would be prohibited on low grade ores.

Ottawa, June 9, 1919.

Test No. 122.

A sample of barite weighing 10 pounds was received May 3, 1919, at the testing plant of the Ore Dressing and Metallurgical Division, from T. B. Caldwell, Lanark, Ont.

The barite contained argentiferous tetrahedrite, and a little azurite and malachite.

Tests were desired on this sample to determine if it would be possible to recover the silver and copper in a concentrate, and produce a clean, high grade barite.

The whole sample was ground to pass 100 mesh, and a sample was cut out for analysis. This sample gave the following:—

Barium sulphate	96·25 per cent.
Copper	0·52 "
Silver	1·80 oz. per ton.
Antimony	present.
Arsenic	present.

Four flotation tests were made upon the material ground to pass 100 mesh, the procedure in each test being as follows: Five hundred grams of the ore were put into a small ball mill along with the required amount of oil and enough water to make a thick pulp. The mill was then revolved for 5 minutes to mix the oil into the ore. The mixed charge was then washed into a small Janney flotation machine and agitated for 5 minutes. During the agitation the froth was skimmed off as it formed.

The oils used in the tests were as follows:—

Test 1.	Pine oil	0·1	c.c.	Coal tar	0·1	c.c.	Coal tar, Creosote	0·3	c.c.
" 2.	Oil No. 26	0·2	c.c.	" "	0·05	c.c.	" " "	0·2	c.c.
" 3.	Oil No. 27	0·2	c.c.	" "	0·05	c.c.	" " "	0·2	c.c.
" 4.	Oil No. 29	0·125	c.c.	" "	0·05	c.c.	" " "	0·3	c.c.

Test No. 1 gave a good amount of fair froth, and tests Nos. 2, 3, and 4 gave a good amount of slightly gummy froth.

The results obtained from the four tests are given in the following table:—

BARITE AND TETRAHEDRITE.

Product.	Weight. Gms.	Per cent Cu.	Oz. Ag.	Cu Gms.	Wt. Gms. × Ozs. Ag.	Per cent Cu. Value.	Per cent Ag. Value.
No. 1 concentrates	33·6	6·05	10·92	2·033	366·9	78·2	40·8
No. 1 tails	466·4	0·11	1·14	0·513	531·7		
No. 1 heads	500·0	0·51	1·80	2·546	898·6		
No. 2 concentrates	60·2	3·40	6·02	2·047	362·4	78·7	40·3
No. 2 tails	439·8	0·09	0·19	0·396	83·6		
No. 2 heads	500·0	0·49	0·89	2·443	446·0		
No. 3 concentrates	44·1	4·50	10·12	1·984	446·3	76·3	49·6
No. 3 tails	455·9	0·07	0·05	0·319	22·8		
No. 3 heads	500·0	0·46	0·94	2·303	469·1		
No. 4 concentrates	32·0	5·80	14·08	1·856	450·6	71·4	50·1
No. 4 tails	468·0	0·07	0·20	0·328	93·6		
No. 4 heads	500·0	0·44	1·09	2·184	544·2		
Heads	500·0	0·52	1·80	2·600	900·0		

The tailings from Test No. 3 were assayed and found to be 97·75 per cent barium sulphate.

Conclusions.

1. The grade of barite produced is very good as shown by the tails of test No. 3. These tails are clean and white, and run 97·75 per cent barium sulphate.

2. The recovery of the copper is fair, approximately 80 per cent.

3. The recovery of the silver is fairly low, approximately 50 per cent.

4. The work conducted on this sample was only of a preliminary nature, and although the results are encouraging, the sample was too small and was used up before any final results could be determined.

Ottawa, December 31, 1919.

Test No. 123.

Two samples of euxenite ore, weighing respectively 22 and 74 pounds, were received at the Ore Dressing and Metallurgical Laboratories on June 19, 1919. These samples were sent in by the Geological Survey, and had come from Maberley, Sherbrooke township, Ontario.

The samples consisted of fairly large crystalline pieces of euxenite in a gangue of very good orthoclase feldspar.

It was desired to conduct tests to see if it would be possible to recover the euxenite in a high grade concentrate, and at the same time, produce a clean, marketable feldspar.

Each sample was crushed separately to pass 4 mesh, and then screened on 6, 8, 10, 14, and 20. The sizes coarser than 20 were treated separately on a small Richards jig, making a concentrate and tailing out of each size. The concentrates were combined and the tailings were combined, dried, and put with the −20 mesh material. This mixture was then crushed to pass 30 mesh and screened on 80. The two sizes —30+80 and —80 were then tabled separately on a small Wilfley table. The concentrates from the table were put with the jig concentrates, and the table tailings were combined. This gave one concentrate and one tailing for each lot, and these were dried and weighed.

Lot 1 (high grade)—	
Heads used in test	20 lb. 5 oz.
Concentrates	10 lb. 11 oz.
Tailings	8 lb. 8 oz.
Lot 2 (low grade)—	
Heads used in test	68 lb. 9 oz.
Concentrates	5 lb. 8 oz.
Tailings	53 lb. 14 oz.

The concentrate produced from each sample was fairly high grade and the tailing was very clean in each case. These products were sent to the Geological Survey.

Ottawa, December 31, 1919.

Test No. 124.

A shipment of one bag of scheelite concentrates was received on July 7, 1919, at the testing plant of the Ore Dressing and Metallurgical Division, from Wm. Steinberger, Esq., Dawson City, Yukon Territory.

The concentrates were shipped from Skagway and had been produced by placer mining. They contained, besides the scheelite, a certain amount of gold, this being in the form of metallic flakes of fair size.

A mill test was desired to ascertain if the gold could be recovered from the scheelite concentrates by an economical process.

Gross weight of concentrates	150 pounds
Net weight of concentrates	146·25 "

The concentrates were crushed and screened on 35 mesh until only metallics were left as oversize. The metallics were treated to recover the bullion in them, and the undersize was weighed and sampled for analysis.

Weight after screening	144·5 pounds.
Weight of sample	0·5 "
Net weight after sampling	144 "
Analysis—WO_3	64·30 per cent.
Au	3·87 oz. per ton.
Content — WO_3	92·59 pounds.
Au	0·2786 oz.
Bullion recovered by screening	0·2166 "

The material which had been crushed to pass 35 mesh was put through an amalgamator and then over amalgamation plates, the flow from the plates being led to a long series of settling boxes so that the scheelite would settle out from the water used in amalgamation. After the run, all the amalgam was collected from the plates and amalgamator, and was treated to recover the bullion in it. The scheelite in the settling boxes was also collected, dried, weighed, and sampled.

Weight after amalgamation	139·25 pounds.
Analysis—WO_3	64·50 per cent.
Au	0·06 oz. per ton.
Content—WO_3	89·82 pounds.
Au	0·0042 oz.
Bullion recovered by amalgamation	0·2890 "

Figuring on the contents of the different products, we have the following percentages:—

Crushing and Screening—	
Recovery of gold values in metallics	42·4 per cent.
Loss of scheelite values would be about	0·06 "
Amalgamation—	
Recovery of gold values in amalgam	56·7 per cent.
Loss of scheelite values	2·99 "
Summary—	
Total recovery of gold values	99·1 per cent.
Total loss of scheelite values	3·05 "
Bullion recovered in metallics by screening	0·2166 oz.
Bullion recovered in amalgam	0·2890 "
Total bullion recovered	0·5056 "

Conclusions.—

1. The value of the gold recovered from a ton of concentrates would be $136, and the value of the scheelite (figured at $8 a unit of tungsten trioxide) lost in treating a ton of concentrate would be $14, so that there is a balance of $122.

2. The scheelite loss would be cut down by the use of better methods to dewater and collect the scheelite after amalgamation.

3. The 99·1 per cent recovery of the gold values is very good. This shows that the gold is very adaptable to amalgamation.

Ottawa, October 22, 1919.

Test No. 125.

A shipment of twenty-five sacks of about 1,000 pounds of low grade molybdenite ore was received on August 8, 1919, from J. H. Teare, Esq., Sault Ste. Marie, Ont. This shipment of ore had been mined at Harvey, Ont.

The molybdenite was of the flake variety, fairly small and disseminated through a gangue which consisted of quartz and green hornblende; and carried small amounts of pyrite, mica, and white feldspar.

The shipment was divided into three lots, called as follows:—

Lot XXX.
Hanging-wall lot.
Foot-wall lot.

All the three lots were crushed separately to pass 40 mesh, and sampled. The samples upon analysis gave the following results:—

Lot XXX—	
MoS_2	0·40 per cent.
Ag	trace.
Au	none.
Hanging-wall lot—	
MoS_2	0·43 per cent.
Ag	none.
Au	none.
Foot-wall lot—	
MoS_2	0·16 per cent.
Ag	none.
Au	none.

Two small flotation tests were made upon a portion of Lot XXX ground to pass 40 mesh. The concentrates and tailings of each test were sampled and assayed with the following results:—

Test 1—	
Concentrates	80·17% MoS_2
Tailings	0·12% "
Test 2—	
Concentrates	91·65% MoS_2
Tailings	0·17% "

Summary and Conclusions.—

1. A high grade concentrate (80 to 90 per cent MoS_2) can be produced.

2. The recovery is fair on such low grade material (70 per cent in test 1). With finer grinding, the recovery would likely be raised to nearly 80 per cent.

REPORT ON GRAPHITE ORE FROM THE QUEBEC GRAPHITE COMPANY, BUCKINGHAM, QUE.

Ottawa, December 30, 1919.

Test No. 126.

A carload shipment of graphite ore was received on October 4, 1919, from the Quebec Graphite Company, Buckingham, Que.

Examination of specimens selected from this carload showed that the graphite occurs as disseminated flake, from a tenth of an inch in diameter down to the finest grains. The associated minerals are iron pyrite, mica, calcite, pyroxene, and other silicates. The graphite is intimately interfoliated with the gangue minerals, making purification difficult without destroying the size of the flake. This point was determined by selecting a flake larger than 28 mesh, which from microscopic examination would be declared pure graphite, but upon analysis was found to contain: graphitic carbon 92·25 per cent; iron and alumina 3·60 per cent; insoluble residue 3·00 per cent; volatile 1·15 per cent. This clearly demonstrated that the above analysis was the upward limit that could be obtained by any mechanical operation, without destroying the flake.

The object of the tests was to determine a suitable flow sheet adaptable to this ore using oil flotation, and if necessary, as much of the old equipment as possible, such as tables and classifiers, to make a high grade product.

Different combinations were tried to arrive at the best possible flow sheet, and for this purpose the carload was divided into approximately three-ton lots, the weight, analysis, and content of which were as follows:—

Test No.	Net weight of ore.	Assay.	Pounds carbon.
1	5,673·5	13·40%	760·25
2	5,785·5	12·40%	775·25
3	5,761·0	13·45%	773·85
4	5,738·0	13·85%	794·71
5	5,694·0	13·25%	754·45
6	8,309·0	13·10%	1,088·47
Total	36,961·0 Or 18·48 tons.	13·34%	4,947·00

In each of the six test runs the ore, after being previously crushed in a jaw crusher to about road metal size, was weighed and sampled automatically and stored in a bin. From the bin it was automatically fed into a 4-foot Hardinge ball mill with a charge of 2,000 pounds of balls, at an approximate rate of 1,200 pounds of ore per

hour, water being added in the ball mill and also the desired amount of oil, which was fed at varying rates in the different runs of from 1·7 pounds to 2·9 pounds per ton of ore treated.

The ground material discharged from the ball mill in the form of a pulp was elevated by means of a centrifugal pump to a Callow screen, the material which passed through the screen was fed to the Callow cells, the oversize material which would not pass through the screen being returned to the ball mill for further reduction.

The density of the pulp going to the rougher flotation cells varied from 3½ to 5½ parts by weight of water to 1 part of ore, and sometimes even more dilute when an excess of wash water was used, but in the mill this should be more easily controlled.

Test 1.—The ore was ground in the ball mill until it all passed a 35 by 12 Greening ton cap screen (smallest opening ·015″).

Average amount of oil used per ton of ore treated 2·9 pounds of mixture, containing 40 per cent No. 5 pine oil, 40 per cent No. 26 F.P.L. and 20 per cent coal oil.

It was then floated in Callow roughing cells, a low grade concentrate being made, and a very low tailing. These concentrates were ground in a Hardinge ball mill using pebbles instead of balls (the charge being 1,223 pounds of pebbles) and refloated in Callow cells, but although this material passed through four retreatment cells the grade was not sufficiently enriched by this particular method of treatment.

Test 2.—The ore was ground in the ball mill until it all passed a 24 by 8 Greening ton cap screen (smallest opening ·02″).

Average amount of oil used per ton of ore treated, 2·2 pounds of mixture containing 70 per cent No. 26 F.P.L. and 30 per cent pine oil.

It was then floated in Callow roughing cells, aiming to make a cleaner concentrate than in test 1 by allowing a little more graphite to go off in the tailings. But the results are not of sufficient interest to more than refer to in passing, as the treatment followed would not give the desired results. But several points were disclosed which assisted in the subsequent tests. For one thing it was found that the grinding effect in the pebble mill was very slight, and in the case of the fine concentrate it was almost negative, consequently it was decided that the balls would be used instead of pebbles for regrinding the concentrate, and the feed to the ball mill would be thickened by using a settling tank in order to assist the grinding.

Test 3.—The ore was ground in the ball mill until it all passed a 24 by 8 Greening ton cap screen (smallest opening ·02″).

Average amount of oil used per ton of ore treated 2·9 pounds of No. 26 F.P.L.

It was then floated in Callow roughing cells, making a concentrate assaying 34·1 per cent carbon and a tailing which represents a recovery in this initial operation of over 90 per cent of the total carbon contents.

The concentrate was passed over a 60 by 20 Greening ton cap screen (smallest opening ·009″) and the oversize was concentrated on a Wilfley table, while the undersize was ground in the pebble mill and refloated in Callow cells.

This test demonstrated that by screening the rougher flotation concentrates on 60 mesh and tabling the oversize, a concentrate of about 80 per cent carbon was made, and the separation of this material on the table was better than the previous attempts when using the cells.

It was also found that refloating the undersize (−60 mesh material) only gave a concentrate assaying 57·4 per cent, and by tabling the tailings of this operation a good separation was made giving a +80 mesh concentrate assaying 81·4 per cent carbon.

This information led us to extend the use of the tables at suitable stages.

A probable reason why the tables make a better separation and a higher grade product on this concentrated material than the cells may be that the rougher concentrates consist partly of particles of almost clean flake and partly of particles com-

posed of graphite and gangue attached, and on the tables these attached particles of gangue and graphite, having a slightly greater specific gravity than graphite itself, travel to the head of the table, while pieces of graphite being more buoyant float off the side. This action is probably augmented by the fact that the small amount of oiling tends to increase the buoyancy of the clean graphite flakes, while its effect is not shown much on the combined particles of graphite and gangue when travelling over the deck of the table.

On the other hand, apparently these attached particles, oiled and floated in the first instance, do not escape the buoyancy of the bubbles in the second flotation cells, and consequently tend to float over with the clean graphite.

Test 4.—The ore was ground in the ball mill until it all passed a 24 by 8 Greening ton cap screen (smallest opening ·02″).

Average amount of oil used per ton of ore treated, 1·8 pounds of No. 25 F.P.L.

It was then floated in Callow roughing cells (adjusted as counter current cells), the aim being to make a higher grade concentrate than previously obtained, using less oil, with the idea that the attached particles would not float in the final flotation process. But with this arrangement too much graphite was lost in the rougher tailings without sufficiently enriching the grade of concentrates, and the idea was abandoned.

Another new departure was tried in this test, namely, to screen the −60 mesh material over an 80 by 36 Greening ton cap screen (·008″) after being reground in the ball mill, and to table the —60 +80 material, and it was found that a considerable portion of the graphite contents were recovered in this way in the form of a high grade concentrate assaying over 80 per cent carbon.

From the information gained in this test, it was agreed to modify the flow sheet of the mill accordingly, and in this way it is expected to recover a satisfactory proportion of the total graphite in the form of a No. 1 flake assaying over 80 per cent carbon, by tabling the +60 rougher concentrates, and also the +80 portion of the −60 rougher concentrate after they have been reground in the ball mill.

Test 5.—The ore was ground in the ball mill and screened on a 35 by 12 Greening ton cap screen (·015″).

Average amount of oil used per ton of ore treated, 1·7 pounds of mixture, 80 per cent coal oil and 20 per cent pine oil.

The material which passed through the screen was floated in Callow roughing cells, making a concentrate of 43·20 per cent carbon and a tailing of 1·85 per cent carbon. The material which remained on the screen was screened through a coarser screen (24 by 8 Greening ton cap) and the oversize, which in practice would be returned to the ball mill to be reground, was dried and weighed, while the undersize was tabled, producing a low grade concentrate of 53·15 per cent carbon.

In this test a settling tank was provided to dewater the —80 rougher concentrate before entering the ball mill in order to permit of a better grinding effect, and a considerable reduction in the size of the material leaving the ball mill was in this way obtained. As already stated, once the No. 1 flake has been removed, this grinding is necessary in order to liberate the attached particles of graphite and gangue.

Test 6.—The ore was ground in the ball mill until it all passed a 24 by 8 Greening ton cap screen (·02″).

Average amount of oil used per ton of ore treated, 2 pounds of mixture, 50 per cent coal oil and 50 per cent pine oil.

It was then floated in one Callow roughing cell, making a concentrate assaying 31· per cent carbon and a tailing, 0·76 per cent carbon, representing a recovery in this initial operation of 96 per cent of the total carbon contents.

The concentrate was passed over a 60 by 20 Greening ton cap screen and the oversize concentrated on a Wilfley table, producing a concentrate assaying 80·4 per

cent carbon, and the undersize was ground in the ball mill and screened on an 80 by 36 Greening ton cap screen (·008") and then tabled, producing a concentrate assaying 82·6 per cent carbon. These two concentrates represent 29·1 per cent of the total carbon in the ore. It is interesting to note that using one rougher cell instead of two, as in the other tests, apparently made no difference in the satisfactory results of the tabling.

The –80 material was floated in Callow cells, making a concentrate assaying 57·5 per cent carbon. The tailing from the Callow cleaner cells assayed 36·1 per cent carbon, and was enriched up to 70·9 per cent carbon by tabling.

The procedure followed in this test was considered the most applicable to this particular ore, so the results are given in detail, with a flow sheet showing the procedure and arrangement.

The following table gives details of the products of test 6 with their respective weights, assays, and contents of carbon:—

Product		Weight lb.	Per cent carbon.	Lb. carbon.	Per cent total carbon.
(*a*) Table conc.	+60	189·0	80·40	152·0	14·0
(*b*) Table tails.	+60	394·0	12·30	48·5	4·5
(*c*) Callow conc.	—80	514·5	57·50	295·8	27·1
(*d*) Rougher tails.	—80	530·0	2·75	14·6	1·3
(*e*) Table conc.	+80	198·5	82·60	164·0	15·1
(*f*) Table tails.	+80	243·5	9·35	22·8	2·1
(*g*) Table conc.	—80	274·0	70·90	194·3	17·8
(*h*) Table tails.	—80	363·5	6·00	21·8	2·0
(*i*) Callow tails.	—24	4,963·0	0·76	37·7	3·5
(*j*) Slime and other loss, etc.		639·0	21·44	137·0	12·6
(*k*) Heads.		8,309·0	13·10	1,088·5	100·0

By rearranging the results we got the following:—

+80 Products—

(*a*) No. 1 flake recovered assaying 80·40% C., representing	14·0%	of total carbon.	
(*e*) No. 1 flake recovered assaying 82·60% C., representing	15·1%	of total carbon.	
(*b*) Table tailings which in practice will be returned to the ball mill for retreatment.. ..12·30% C., representing	4·5%	of total carbon.	
(*f*) Table tailings which in practice will be returned to the ball mill for retreatment.. 9·35% C., representing	2·1%	of total carbon.	
	35·7%		35·7%

of which 29·1 per cent was actually recovered. In practice most of the balance (6·6) per cent would be also recovered, but probably not all as +80 material.

—80 Products—

(*c*) Flotation conc. assaying 57·50%, representing.. of total carbon.	27·1%	
(*g*) Table conc. assaying 70·90%, representing.. of total carbon.	17·8%	
(*h*) Table tailings assaying 6·00%, representing.. of total carbon.	2·0%	
	46·9%	46·9%
		82·6%

of which 44·9 per cent was actually recovered, and in practice most of the balance (2·0) would be also recovered.

Actual tailings to waste assaying 0·76%, representing.. of total carbon.	3·5%	
Actual tailings to waste assaying 2·75%, representing.. of total carbon.	1·3%	
	4·8%	4·8%
		87·4%
Loss in slimes, etc..		12·6%
		100·0%

This 12·6 per cent loss is due to overflows and accidental losses always more or less in evidence when handling small quantities in intermittent runs, but these will not occur during regular mill operations.

While the exact figures of the recovery that will be obtained cannot be given, owing to necessary difference between a test run and regular mill operations, the above figures show that a high recovery should be attained, giving the proportion of +80 flake assaying 80 per cent carbon or better as about one-third of the total carbon content.

The actual recovery of the +80 was 29·1 per cent of the total carbon contents.
The actual recovery of the —80 was 44·9 per cent of the total carbon contents.

74·0 per cent.

The total loss in tailings was only 4·8 per cent, which would represent a recovery of 95·2 per cent, assuming that the whole of the retreatment products were recovered and there was no slime loss. But as milling is always accompanied by some accidental losses and occasional bad operating conditions from time to time, a recovery of 95 per cent (as represented by the tailings losses in this test) should not be expected.

On the other hand it is only fair to expect that when the plant is adjusted, a considerably higher recovery will be made than that actually obtained when making a test run of only four tons, with all the disadvantages of intermittent running, and its attendant losses. So by striking the average between the two figures 74 per cent and 95 per cent, namely 85 per cent, a conservative estimate of the recovery should be arrived at, although it is quite likely that a 90 per cent recovery will ultimately be made.

A conservative estimate, based on this test, of the proportion of No. 1 flake (+80) recovered in practice can be taken as one-third of the total carbon contents, but by adjusting the milling conditions, it is possible that this percentage can be increased by coarser screening of the flotation feed to the rougher cell. In this connexion a sample of the rougher cell concentrate and tailings were screened through Tyler standard screens with the following results:—

	Conc. by wt.	Tailings by wt.
	%	%
Remaining on 35 sq. mesh screen (·0164" opening)..	5·8	3·5
Remaining on 65 sq. mesh screen (·0082" opening)..	18·9	13·2
Remaining on 150 sq. mesh screen (·0041" opening)..	27·5	23·7
Passing through 150 sq. mesh screen..	47·8	59·6
	100·0	100·0

In practice it is expected that the feed can be delivered to the rougher cell with a larger percentage of +65 mesh material than indicated by the above screen analysis, without any detrimental effect and the coarser this feed can be kept within certain limits the greater will be the proportion of No. 1 flake recovered.

This test does not include the final finishing of the flake for the market. It is understood that the Company has already this equipment and are in a position to undertake this work themselves.

Ottawa, December 10, 1919.

Test No. 127.

A shipment of sixty-eight pounds of gold ore was received on October 21, 1919, from M. R. Blake, Esq., Winnipeg, Man.

The ore consisted of white vein quartz, carrying small amounts of arsenopyrite, chalcopyrite, and galena. No free gold was visible in the original ore, but upon crushing and grinding, a large number of very fine flat flakes appeared.

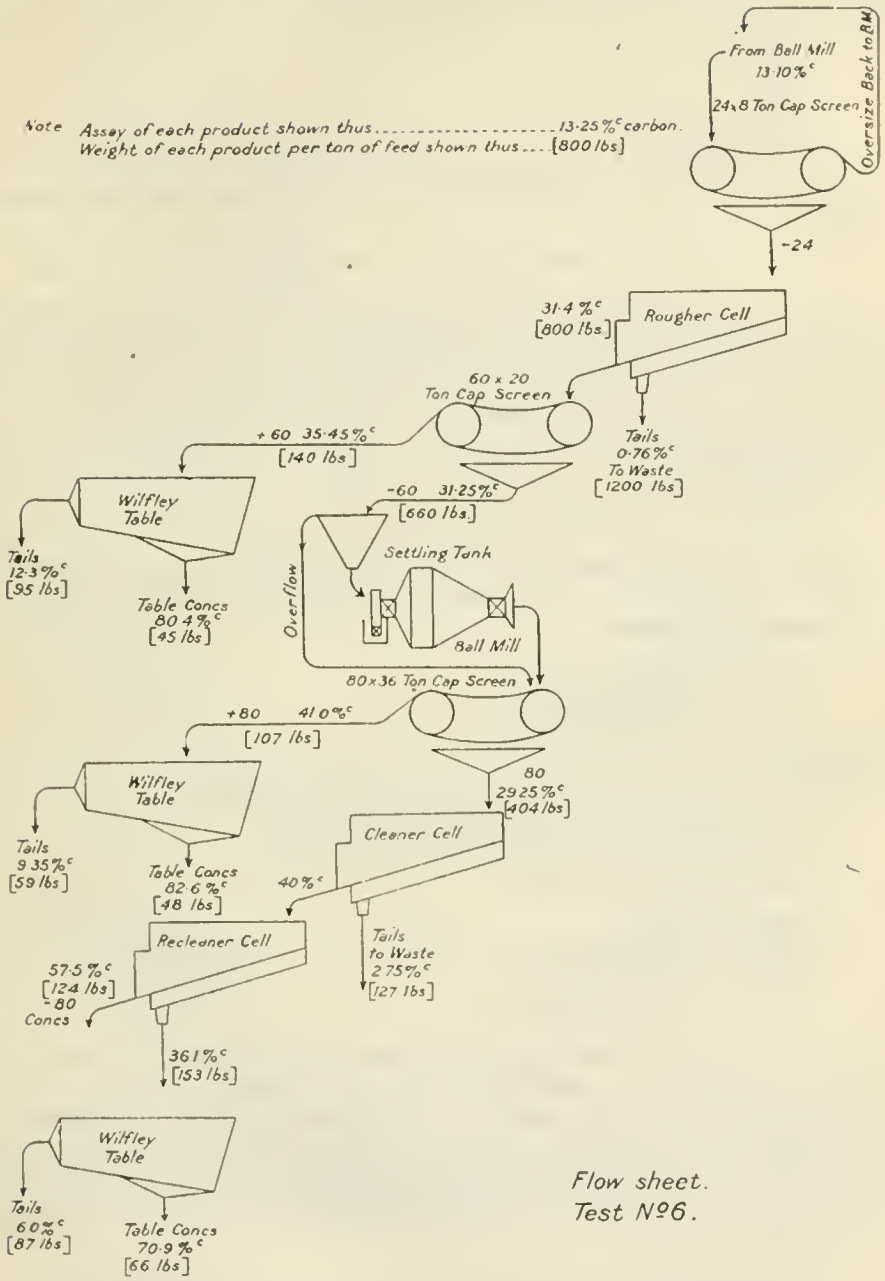

Fig. 1. Flow sheet of test No. 6: showing oil flotation process in the purification of disseminated flake graphite ore.

A few specimens were selected from the shipment and the remaining ore was crushed to 40 mesh and duplicate samples taken, from which the following average assay was obtained:—

Gold	6·75 oz. per ton.
Silver	1·04 " "
Copper	0·07 per cent.
Lead	0·03 "
Arsenic	0·66 "

It was desired that a suitable process for the recovery of the gold and silver in this ore be developed, and with this end in view, the following experiments were carried out:—

Amalgamation and Cyanidation.

Test 1.—One thousand grams of the original ore ground to pass 40 mesh were put into a small pebble mill along with 100 grams of mercury and 400 c.c. of water. The jar was then revolved with this charge for 2¼ hours, after which the contents of the jar were panned to recover the mercury. During the panning, a lot of sulphides floated away with the tails, but a small amount was saved as a concentrate.

Mercury recovered	100 gms.
Concentrates	5·2433 gms., Au 29·05 oz. per ton.
Tails	994 gms, Au 3·96 oz. per ton.

The tails from this amalgamation were ground to 100 mesh, and cyanided for 8 hours in a ·23 per cent solution. After this treatment, the tails were sampled and cyanided again, as before.

Tails after 1st cyanidation—Au	0·16 oz per ton.
Tails after 2nd cyanidation—Au	0·06 " "
Recovery—1. In concentrates	2·3 per cent.
2. By amalgamation	39·0 "
3. By cyanidation	57·8 "
Loss	0·9 "

Test 2.—This test is the same as test No. 1 with the following changes:—

1. Charge revolved in the pebble mill 3¼ hours.
2. No concentrate saved in panning.

This test gave the following:—

Mercury recovered	99·5 gms.
Tails from amalgamation	992 gms, Au 0·65 oz. per ton.
Tails after 1st cyanidation—Au	0·04 oz. per ton.
Tails after 2nd cyanidation—Au	trace.
Recovery—1. By amalgamation	91·7 per cent.
2. By cyanidation	8·3 "

Test 3.—Twenty-six and one-quarter pounds of the original ore crushed to 40 mesh were put through an amalgamator, and then over amalgamation plates, the flow from the plates being led to a series of settling boxes, so that the amalgamated ore would settle out from the water. After the run, all the amalgam was collected from the amalgamator and the plates, and treated to recover the bullion in it. The ore in the settling boxes was also collected, dried, weighed, and sampled. In panning the mercury from the ore remaining in the amalgamator, a small amount of concentrate was recovered.

Weight of tails	26·25 pounds.
Analysis—Au	1·80 oz. per ton.
Content	0·02362 oz.
Gold recovered in concentrate	0·00189 "
Gold recovered as bullion	0·06574 "
Gold in heads used	0·08859 "

Two thousand three hundred and sixty-five grams of tailings from the above were crushed to pass 100 mesh. In doing this, a small amount of metallics was recovered on the screen. The material —100 mesh was cut in two on a Jones riffler, and the two halves were cyanided separately for eight hours in a 0·23 per cent solution, then decanted, washed, and cyanided again for eight hours with fresh solution.

First half—	
Tailings after 2nd cyanidation—Au	0·18 oz. per ton.
Second half—	
Tailings after 2nd cyanidation—Au	0·15 oz. per ton.

Gold recovered in metallics 32 mgs. Au 0·395 oz. per ton.

Recovery—	1. By cyanidation	2·1 per cent.
	2. By amalgamation	72·0 "
	3. In metallics	5·7 "
	4. By cyanidation	17·8 "
Loss		2·4 "

Amalgamation, Tabling, and Cyanidation.

Test 4.—20·5 pounds of amalgamation tails from test No. 3 were tabled upon a small Wilfley table, making a concentrate, a middling and a tailing. The middlings were rerun, making a concentrate and a tailing which were put respectively with the first concentrate and tailing. In tabling, a small amount of the concentrate floated off as a scum into the tailing box; this scum was removed and put with the concentrate.

Weight of concentrate	0·386 pound.
Analysis—Au	82·12 oz. per ton.
Content—Au	0·01585 oz. per ton.
Weight of tailings	19 pounds.
Analysis—Au	0·28 oz. per ton.
Content—Au	0·00266 oz.
Gold in feed used	0·01845 "

Two 1,000-gram lots of the above tailing, crushed to pass 100 mesh, were cyanided for 8 hours in a 0·23 per cent solution and then decanted, washed, and cyanided for another 8 hours with fresh solution.

Tails after 2nd cyanidation—Au	
First lot—	0·10 oz. per ton.
Tails after 2nd cyanidation—Au	
Second lot—	0·08 oz. per ton.
Recovery—	
1. By concentration	2·1 per cent.
2. By amalgamation	72·0 "
3. By tabling	22·2 "
4. By cyanidation	2·5 "
Loss	1·2 "

Tabling and Cyanidation.

Test 5.—11·75 pounds of original ore crushed to pass 40 mesh were tabled on a small Wilfley table, making a concentrate, a middling, and a tailing. The middling was rerun, making a concentrate and a tailing, which were put with the first concentrate and tailing. Some scum found floating in the tailing box was put with the concentrate.

Weight of concentrate	0·236 pounds.
Analysis—Au	263·60 oz. per ton.
Content—Au	0·03110 oz.
Weight of tailings	10·75 pounds.
Analysis—Au	1·16 oz. per ton.
Content—Au	0·00623 oz.
Gold in feed used	0·03966 "

Two 1,000-gram lots of the above tailing, crushed to pass 100 mesh, were cyanided for eight hours in a 0·23 per cent solution and then decanted, washed, and cyanided for another eight hours with fresh solution.

First lot—	
Tails after 2nd cyanidation—Au	0·10 oz. per ton.
Second lot—	
Tails after 2nd cyanidation—Au	0·10 oz. per ton.
Recovery—	
1. By tabling	83·3 per cent.
2. By cyanidation	15·3 "
Loss	1·4 "

Test 6.—10·10 pounds of original ore were crushed to pass 40 mesh, some metallics being obtained on the screen The −40-mesh material was sampled and the remainder, 9·47 pounds, was tabled on a small Wilfley table, the procedure being the same as in the tabling in test No. 5.

Gold in metallics from 10·10 pounds	68·35 mgs.
" " " 9·47 "	64·07 "
=	0·00206 oz.
Weight of concentrate	0·196 pounds.
Analysis—Au	228·41 oz. per ton.
Content—Au	0·02238 oz.
Weight of tails	8·77 pounds.
Analysis—Au	1·19 oz. per ton.
Content	0·00522 oz.
Analysis of −40 material—Au	5·85 oz. per ton.
Metallics +40-mesh corresponded to	0·43 oz. per ton.
∴ Analysis feed used	6·28 oz. per ton.
Gold in feed used=	0·02974 oz.

Two 1,000 gram lots of the above tailing crushed to pass 100 mesh were cyanided for eight hours in a 0·23 per cent solution and then decanted, washed, and cyanided for another eight hours with fresh solution.

First lot—	
Tails after 2nd cyanidation—Au	0·08 oz. per ton.
Second lot—	
Tails after 2nd cyanidation—Au	0·16 oz. per ton.
Recovery—	
1. In metallics	6·9 per cent.
2. By tabling	75·5 "
3. By cyanidation	15·8 "
Loss	1·8 "

Tabling and Flotation.

Test 7.—A small flotation test was made upon 500 grams of table tails from test No. 6 ground to pass 100 mesh.

Weight of concentrate	5·35 grams.
Analysis—Au	71·00 oz. per ton.
Content—Au	0·000419 oz.
Weight of middling	36·0 grams.
Analysis—Au	4·12 oz. per ton.
Content—Au	0·000164 oz.
Weight of tails	456·0 grams.
Analysis—Au	0·10 oz. per ton.
Content—Au	0·000050 oz.
Gold in feed used	0·000656 "
Recovery—	
1. In metallics	6·9 per cent.
2. By tabling	75·5 "
3. In flotation concentrates	11·6 "
4. In flotation middlings	4·6 "
Loss	1·4 "

FLOTATION AND TABLING.

Test 8.—1,560 grams of original ore were crushed to pass 40 mesh, and some metallics were obtained on the screen. A flotation tail was then made upon the −40 material.

Gold in metallics. 10·50 mgs.	0·000627 oz.
Weight of concentrate	56 grams.
Analysis—Au	45·22 oz. per ton.
Content—Au	0·002791 oz.
Weight of middling	89 grams.
Analysis—Au	10·02 oz. per ton.
Content—Au	0·000983 oz.
Weight of tailings	1,403 grams.
Analysis—Au	4·20 oz. per ton.
Content—Au	0·006495 oz.
Gold in feed used	0·011607 "

Thirteen hundred and four grams of flotation tailings were tabled upon the small Wilfley table, the procedure being the same as in the tabling in test No. 5. In this tabling no scum was found in the tailing box.

Weight of concentrate	15 grams.
Analysis—Au	399·21 oz. per ton.
Content—Au	0·00660 oz.
Weight of tailings	1,262 grams.
Analysis—Au	0·22 oz. per ton.
Content—Au	0·00031 oz.
Gold in feed used	0·00604 "
Recovery—	
1. In metallics	5·8 per cent.
2. In flotation concentrate	25·6 "
3. In flotation middling	9·0 "
4. In table concentrate	56·9 "
Loss	2·7 "

Conclusions.

The above tests show that the ore as represented by the small lot submitted can be treated in a number of ways with success, and the selection will depend to a large extent on the situation of the property and other local conditions.

The ore contains values in gold to the extent of $135 per ton, and as 80 per cent of this can be recovered by amalgamation, it is obvious that amalgamation would be adopted as the first stage in the treatment.

The ore contains mineral in the form of arsenopyrite, chalcopyrite, galena, and sphalerite to the extent of 1·5 per cent by weight, and this mineral constituent can be concentrated on tables and a high grade concentrate obtained, carrying practically all that remains of the gold values after amalgamation. This seems feasible as the second stage of the treatment.

It has been proven that the tailings after amalgamation and concentration, reground to 100 mesh can be readily cyanided with a recovery of any values remaining.

It has also been proven that from the tailings after amalgamation and concentration, reground to 100 mesh, the remaining values can be concentrated by flotation.

Which of these latter methods is adopted will depend on local conditions.

III.

REPORT OF THE CHEMICAL LABORATORY.

H. C. Mabee, *Chemist in charge.*

During the earlier part of the year 1919 the work of the chemical laboratory of this division was, for the most part, a continuation of that of the previous year. This included the examination and analysis of a large number of metalliferous ores and non-metalliferous minerals from the Canadian Munitions Resources Commission in the completion of their several investigations during the previous year; also a number of samples of graphite, barite, and other non-metallic minerals from the staff of the Division of Non-metalliferous Deposits, Sussex street. In addition, the regular activities of the Ore Dressing and Metallurgical Division throughout the year have fully occupied the attention of the staff of the chemical laboratory.

Through the loss of Mr. Graham, who left the service in May, and the resignation of Mr. Coyne, in October, the staff was reduced to two chemists, and these vacancies were still unfilled at the close of the year.

Owing to the lack of sufficient help, it has been impossible to comply adequately with the demands of the Ore Dressing Division. In most cases expeditious tests on shipments of ore are of prime importance; but as this involves a large amount of sampling and careful laboratory attention, without sufficient chemical assistance, prompt results are impossible. If the best results are to be obtained from the Ore Dressing Laboratories, it is necessary that additional help should be provided in the chemical laboratory.

The laboratory accommodation has been increased to a small extent by the rearranging and equipping of a special room for an assay laboratory. This room, while not as conveniently located as might be desired, nevertheless fills a very great need. If, however, the work of the Ore Dressing and Metallurgical Division is to develop to meet the increasing demands of the mining industries, it is extremely urgent that entirely new laboratory buildings should be built to replace the scattered, temporary accommodation now available.

The laboratory equipment has been increased during the year by the following apparatus: two double door aluminium desiccator ovens; one Braun four-unit electrolytic apparatus with revolving anodes, including four platinum cylindrical gauze cathodes, and four platinum anodes; one oil-fired melting furnace, and one muffle furnace, built in place.

The total number of samples from all sources, submitted for analysis during the calendar year, was 814, involving over 3,000 determinations. The ores were as follows:—

Bauxite, 2 samples.
Determined—silica, iron, alumina, and titanium.

Barite, 15 samples.
Determined—barium sulphate, silica, lime, and magnesia.

Chromite, 8 samples.
Determined—chromic acid, and sulphur.

Copper, 92 samples.
Determined—copper, and iron.

Fluorite, 20 samples.
Determined—calcium fluorite, calcium carbonate, strontium sulphate, silica, and barium sulphate.

Gold, 74 samples.
Determined—gold.

Gold-Cobalt, 9 samples.
Determined—gold, cobalt, arsenic, nickel, and molybdenum.

Gold-Platinum, 55 samples.
Determined—gold, and platinum.

Graphite, 167 samples.
Determined—carbon, and iron.

Iron, 4 samples.
Determined—iron, silica, and phosphorus.

Infusorial earth, 1 sample.
Determined—silica, alumina, iron trioxide, lime, magnesia, and loss on ignition.

Manganese, 100 samples.
Determined—manganese, iron, silica, phosphorus, and sulphur.

Molybdenite, 117 samples.
Determined—molybdenum sulphide, and molybdenum trioxide.

Nickel-Copper (ores and sinter), 40 samples.
Determined—nickel, copper, sulphur, and sulphur trioxide.

Platinum, 11 samples.
Determined—platinum, and gold.

Pyrite (iron pyrites), 41 samples.
Determined—sulphur.

Rock, 9 samples.
Determined—silica, iron, alumina, and lime.

Tungsten, 20 samples.
Determined—tungstic oxide.

Zinc, Lead, 30 samples.
Determined—zinc, lead, and iron.

CERAMIC DIVISION.

JOSEPH KEELE, *Chief of Division.*

I.

INTRODUCTORY.

The field and laboratory work of the Ceramic Division during the past year consisted in an investigation of available deposits of raw materials used in the ceramic industries. These materials include clays, shales, feldspar, quartz, sandstone, limestone, talc, bauxite, magnesite, etc.

During a part of the summer a systematic survey was made of all the available structural materials in Dundas, Stormont, and Glengarry counties, Ontario, in order to ascertain the nature, extent, and quality of those deposits suitable for the extensive structures proposed in connexion with the power development on the St. Lawrence river. A brief summary of these materials is given in the following pages.

A survey was also made of the Mattagami and Abitibi rivers in northern Ontario in order to examine the deposits of high grade clays on those streams.

A description of samples of fire and pottery clays, with tests, from near the Long Portage in Mattagami river is given in the Summary Report of the Mines Branch for 1918. Fireclays were discovered by the writer at two other localities on the Mattagami river during the examination in 1919.

The laboratory work of the division consisted principally in testing samples of clay and shale collected by the writer, and by members of the Geological Survey. About fifty samples of clay were tested for various people throughout the Dominion. The facilities offered by the clay testing laboratory are now freely taken advantage of by the general public.

Owing to the difficulty in securing qualified assistants for the laboratory, very little research work or special experiments were carried on. A good deal of work in art pottery, however, was accomplished, and collections of glazed pottery were sent to the Technical School Museums at Halifax and Regina to illustrate the uses of the high grade clays which occur in the Provinces of Nova Scotia and Saskatchewan. The principal part of the work on pottery was done by Miss M. E. Young.

The services of Mr. R. T. Elworthy of the Chemical Division were secured for a short time to carry on some experiments on highly colloidal clays. Mr. Elworthy has also prepared a brief statement for this report concerning the sources of alumina, and the uses in the various industries.

A list of the various clay products made in Canada, and their values, together with the amount of imported clay products and other ceramic wares, is published in the Annual Report of the Mineral Resources and Statistics Division of the Mines Branch.

II.

BRITISH COLUMBIA.

Residual Clays.

Baker Creek, Cariboo.

In the Summary Report for 1918, an account was given of white and grey burning residual clays from Chimney creek, Lillooet. Although these deposits contained refractory clays, they were of small extent. Mr. Reinecke, of the Geological Survey, who examined and sampled these clays, continued the search for high grade materials in the same region during the summer of 1919. He found large deposits of whitish, residual clays in the canyon on Baker creek, on lots 8651 and 8654.

These clays, like those on Chimney creek, are the result of the decomposition of impure quartzites of the Cache Creek series, and are found intermingled with rock fragments in various stages of decay, so that to render them usable they have either to be washed and screened, or else the whole deposit, including the rock fragments, must be ground to powder in a ball mill. The clay samples from Baker creek were silty, and contained very little true clay substance, hence they were difficult to mould; furthermore, the clays did not burn to white colours, and were not refractory.

Williams Lake, Cariboo.

The most extensive deposit of white burning residual clay found up to the present in British Columbia is said to occur in the vicinity of Williams lake. A quantity of this material was taken to Vancouver for experimental purposes, and the results obtained in white ware body trials were promising.

For the manufacture of white ware goods, such as pottery, wall and floor tile, etc., this clay has to be mixed with a certain proportion of feldspar, and a white-burning, plastic clay, such as the one from Quesnel, described below.

Fireclays near Prince George.

A series of clay beds, probably of Tertiary age, outcrop on the immediate west bank of the Fraser river in lot 3991, 30 miles above Prince George. The outcrop extends for about 1,000 feet along the river at the point sampled.

The following section was measured by Mr. L. Reinecke, of the Geological Survey:—

River gravel and boulders	4—8 feet.
Very plastic white clay	2—6 "
Sandy, greyish white clay	2 "
Bluish grey clay	3 "
Talus covered slope to water	7 "

The horizontal extent of the beds underneath the flat terrace that forms the top of the gravels is not known. A sample was taken of the upper white clay bed, which has a thickness, in places, of 6 feet.

This clay is sandy in texture, and of medium plasticity, but its working qualities are good.

It burns to a nearly white strong body, at cone 7, with a total shrinkage of only 4 per cent, and absorption of 14 per cent. The material is intact when raised to a temperature that softens pyrometric cone 26—approximately 3,000 deg. F.—so that it is a fireclay.

A good commercial fire brick could be made from this material, or it could be used for face brick, or other high grade clay products.

In order to make the deposit available, a wagon road 1½ mile long would have to be built to connect with the Prince George-Giscome Portage road, at a point at about 22 miles from Prince George. The most feasible method of transport, however, is by scow down the river to Prince George, as there is a steamboat channel all the way down.

Pottery Clay near Quesnel.

On the west side of the Fraser river, about 8 miles above Quesnel, the banks rise to a height of 500 feet. Near the top of the bank there is a white clay bed about 20 feet thick, exposed for a length of 50 feet. This deposit was examined and sampled by Mr. Reinecke in 1919, who states that there is only about 2 feet of soil or overburden on the clay. The banks are slumped in places, and clay beds associated with infusorial earth beds occur at several different levels.

The white clay is very plastic, and works and dries well. It burns to a white porous body at all temperatures up to the softening point of cone 7—approximately 2,300 deg. C. When burned to this temperature it has a total shrinkage of 6 per cent, and an absorption of 16 per cent.

This clay begins to soften at cone 15, and is completely fused at cone 18—about 2,700 deg. F., so that it is only semi-refractory, and cannot be classed as a fireclay.

The chief interest of this clay, however, is that it keeps its white colour when burned to a comparatively high temperature, and since it has good plasticity, can be used as an ingredient for a pottery body in the manufacture of white ware. In other words, it might take the place of a ball clay if nothing better was available.

It could probably be used for the manufacture of stoneware goods, but it would have to be burned to about cone 9 or 10 in order to produce a dense or vitrified body.

The white colour and fine grain of this clay also suggests its use as a paper filler.

Brick Clays.

Several samples of clay received through Mr. Weston Coyney of Prince Rupert were collected at Terrace and Lakelse.

These were evidently lake or estuarine clays, the samples taken from the upper part of the deposits being reddish in colour, while the lower portion was lead grey.

These clays have good plasticity and working qualities, and appear to be free from pebbles or coarse grit. They burn to a fine red colour and dense body at the ordinary temperatures of brick burning, while the shrinkages are within practical limits.

As nearly as could be judged by the small samples of material submitted for examination, they appear to represent the best brick clays from British Columbia which have so far passed through the laboratory. On account of their smoothness and good tensile strength in the raw state, these clays could be used for the manufacture of field drain tile, and possibly for hollow building blocks.

The deposits are said to be extensive, and are conveniently situated to the railway line, about 90 miles east of Prince Rupert.

Fullers Earth.

Fullers earth is a clay-like material which obtains its name from its original use in fulling cloth. Its principal use in the industries of the present time is in bleaching, clarifying, or filtering fats, greases, and oils.

The occurrence of fullers earth has hitherto never been recorded in Canada, the supplies for the packing houses being imported either from England or the United States.

The writer has found several materials having the appearance of fullers earth, but when samples were tested in the laboratory or submitted to a firm of packers they failed to act as clarifiers of oil.

The only sample of earth which appeared to be an effective bleacher for oils was recently sent by Mr. Bertrand Chester, Meadows Ranch, Seven Lakes P.O., Cariboo, B.C. In appearance it was a friable, yellowish-brown material, resembling impure diatomaceous earth. Nothing is known at present regarding the extent of the deposit or its availability for transportation.

The value of the fullers earth imported into Canada in 1919 was about $20,000.

III.

CLAYS AND SHALE IN THE VICINITY OF FORT WILLIAM AND PORT ARTHUR.

There is an abundance of stoneless clay, suitable for the manufacture of brick and tile, along the lower reaches of the Kaministikwia river; in fact there is no other point in Ontario so well supplied with a good convenient brick material, except the city of Toronto.

A good opportunity for examining the clay deposits is afforded by the excavation made for brickmaking at the three brick plants situated close to the river at the outskirts of Fort William. The best section is at the Gownlocks plant, where 76 feet in thickness of stratified clay was exposed. The upper part of the clay is composed of smooth, olive clay layers, interlaminated with reddish bands of clay of silty texture, while the middle part of the bank is of greyish stratified clay, rather more silty and shorter in texture than the top clay. The lowest part is brownish to grey silty clay, more compact and massive than the upper clay, but shows rough lamination. It is sandy in places, but the clay, as a whole, is plastic enough, but not nearly so smooth and plastic as the upper portion.

No stones, pebbles, or concretions, could be detected in any portion of the deposit.

About 4 or 5 feet of yellow sand overlies the clay.

The stratified brick clay deposit is underlain by coarse river gravels, but the gravels are at such a depth that they are not exposed on the lower reaches of the river. On going up stream, however, the clay thins out, and the gravels rise toward the surface. At Rosslyn, about 6 miles north of Fort William, the gravels come to within about 6 feet of the surface.

The clay deposit at the pits of the Superior Brick and Tile Company's plant, consists of about 5 feet of smooth plastic red clay, interlaminated with red sandy clay. The coarse river gravels lie immediately under the clay, and it is overlain by 2 to 3 feet of reddish sand.

The clay disappears a short distance beyond Rosslyn, while the gravels rise to the surface.

No clay appears beyond the point near the Canadian Pacific Railway line until about 5 miles west of Kaministikwia station, or half a mile beyond Mattawin river bridge. A thin deposit of stoneless red clay begins here, which thickens considerably toward Finmark, 4 miles farther on. This red clay deposit extends as far west as Buda, 8 miles west of Finmark.

A sample of the red clay was collected near Sunrise section house. The clay at this point appears to lie in a broad depression in the Archæan upland, through which the Mattawin river flows.

The base of the clay is near the level of the railway track, and consists of layers of coarse grey sand interstratified with thin clay layers, while the upper part of the deposit is all red clay, rather massive in structure, the whole section here being about 25 feet thick.

The red clay is exceedingly smooth, plastic, and rather sticky when freshly dug from the bank. It appears to be quite stoneless, but contains a few scattered concretions.

This clay is very stiff and difficult to work, and its shrinkage on drying is too great. It burns at low temperatures, to a porous but hard, red body, and is liable to become fire checked. It would, however, be suitable for making common building brick, if mixed with sand in the proportion of 2 parts clay to one part sand, but the clay could not be worked without the sand addition. This clay is not as good a brick material as the clay at Rosslyn.

There appears to be quite a large deposit of clay on the bank of the McIntyre river on the property of the Canadian Resources Development Company of Port Arthur. This deposit is about 1½ mile from the shore of Lake Superior, and is situated in the municipality of Port Arthur.

The borings made by the company are said to have proved the thickness of the clay to be 24 to 32 feet. Only about 6 feet of the upper portions of the deposit was available for sampling when the writer visited the locality.

It is a rather stiff, red to yellowish, sandy clay in the upper part, and bluish stratified clay below, which contains a 2-inch streak of fine gravel.

About a foot or two of brownish-red, sandy loam overlies the clay, and about 10 per cent of this was included in the sample with the average of the top and bottom clays.

This clay is not so plastic as the clay at Fort William, being short in texture when wet; but it has the advantage of low shrinkage, and will stand fast drying without checking, which the Fort William clay does not.

It burns to a pale red and very porous body, which appears to be due to containing a rather high percentage of carbonate of lime.

This clay would probably be suitable for the manufacture of common building brick made by the soft-mud process. Its poor colour and high porosity would exclude it from being used for face brick, but it might be used for backing and partition brick.

Shale Deposits.

Shale, suitable for the manufacture of clay products, occurs on the east shore of Thunder Bay, Lake Superior, about 15 miles east of Port Arthur and Fort William.

The shale outcrops at the water edge, and is exposed for several miles along the shore. It is overlain by a great thickness of conglomerate, sandstone, and red shale, but the upper material contains no beds suitable for the manufacture of brick or tile.

The shale exposed along the shore reaches a thickness of 40 feet in places, and an abundant supply could be mined for many years, and brought across the bay in barges. The material is greenish grey in colour, and weathers into thin flaky layers with films of yellowish clay between.

A large sample of this shale was tested at the Mines Branch laboratories, and found to be satisfactory for working up into brick and hollow ware shapes. When ground and mixed with water, the material develops fairly good plasticity and working qualities. Its drying qualities are good and the shrinkage low. It burns to a good

strong body, with a fine red colour. The burned ware is liable to show a white scum, but this can be eliminated with the addition of a small amount of barium carbonate. This shale has not a very long range of vitrification, consequently it would not be safe to attempt the manufacture of vitrified products.

It would be found advantageous to mix some of the plastic surface clay at Fort William with the shale, as this mixture would flow through the dies of the machine easier, and would require less power than if all shale were used. A mixture of half shale and half clay would be found suitable for making large hollow blocks, and this method would reduce the amount of shale that would otherwise have to be ground.

It is possible that this shale could also be used for the manufacture of heavy red floor tile or roofing tile, but for this purpose it would have to be ground much finer than if used for brick.

Slate.

Mount McKay, in the vicinity of Fort William, is built up largely of dark Animikie slate beds. These beds are not true slates, but are really hard, gritty, shales, which do not show any plasticity when finely ground and mixed with water. An attempt was made to utilize these slates by working them up into brick by the dry pressed process. A plant was actually built for this purpose at the base of Mount McKay, and operated for a short period.

Unless the brick made from this slate is burned to nearly the point of vitrification, it will be too soft and weak for structural purposes; but as the softening point of the slate is low, the brick made from it will become overfired and deformed, especially in the upper part of the down-draft kiln, when approaching the temperature necessary for vitrification. Furthermore, owing to the short vitrification range of the slate, the bricks in the lower part of the kiln may be far too soft, while the upper ones are overfired.

The important difference between a shale and slate is, that the former is plastic when ground and moistened, while the latter is not; consequently, some bonding material, such as plastic clay, must be added to the ground slate when utilized for brickmaking. The obvious remedy in the case of the Mount McKay brick plant would be to add some plastic surface clay to the slate while it was being ground in the dry pans, and this mixture could be relied upon to make a much better brick than if slate alone was used.

Clay-working Industry.

There were formerly five plants making burned clay products and one sand lime brick plant in the vicinity of Fort William and Port Arthur.

During 1919 only three brick plants were in operation, and none of them ran at full capacity, but an increased production is expected during the following year.

The large deposits of stratified clay on the banks of the Kaministikwia river at West Fort William consist of good raw material for the manufacture of common red building brick. This clay slakes readily when wet, and is not inclined to be lumpy. It runs easily in the machine, and slips well from this mould. These properties facilitate production, and it is said that as many as 50,000 bricks have been made in a day on a Martin machine at the Alsip plant. This is probably the highest record in Canada from a soft-mud brick machine. A very good red stock brick is produced at the various plants at West Fort William. The hard burned ones are, of course, the best; they have a good ring when struck together. The moulding sand is obtained from the top of the clay deposits, and as it burns to a rich red, it imparts this colour to the surfaces of the brick, but in those portions of the kiln where the air supply is

limited the reducing action turns the colour into fine dark and flashed shades. These variegated shades which range from almost black to red in the burned brick, are in great demand, especially for the best class of dwellings.

Underburned brick made from this clay are undesirable, on account of their low strength and poor colour, which even the moulding sand does not always conceal.

The plants in West Fort William make only soft mud or sand moulded brick. The brick are mostly air dried on racks and pallets. The burning is done in scove kilns, the fuel used being wood.

This method of burning is simple, and involves no outlay of capital for kilns or overhead expenses during the winter months, when the plants are closed. There is a great deal of waste, however, in the scove kilns, due to broken overburned brick in the fire arches, as well as an undue quantity of soft brick. Better results are obtained in permanent, round, or rectangular down-draft kilns, fired with wood and coal where a saving of fuel is effected and a larger percentage of hard brick produced. These kilns can also be constructed without much extra expense, so that the waste heat from cooling kilns can be drawn off by means of underground flues, and sent into the brick driers; or the waste heat can be used to preheat another kiln.

The plant of the Superior Brick and Tile Company is situated at Rosslyn, about 6 miles north of Fort William. This is a well equipped plant, with 6 down-draft kilns, having a capacity of 80 to 90 thousand brick each. Provision is made to take the waste heat from the cooling kilns to the brick drying tunnels by means of a suction fan.

A good quality of wire-cut, rough faced, red building brick is made at this plant. Some fine effects of colour are produced on the faces of the brick in the upper part of the kiln, where some of the brick are of a gunmetal shade.

Unfortunately, the clay will not stand overfiring, consequently the brick at the top of the kiln are liable to be partly melted or stuck together if the finishing temperature is carried too high.

The clay at this plant burns to a hard strong body at low temperatures, and is very smooth and plastic, so that it would make a good field drain tile, or hollow building brick for interior construction.

This clay also appears to be smooth enough to be used for the manufacture of flower pots.

The utilization of the plastic Animikie shale from Sawyer Bay should provide a means for increasing the range of clay products made in this district. This shale, or a mixture of clay and shale, should give satisfactory hollow building block or fireproofing, together with rough faced and dry-press building brick. It is also possible that when finely ground this shale could be used in the manufacture of floor tile or roof tile.

IV.

KAOLIN IN GATINEAU VALLEY, QUEBEC.

In 1909, development work was begun on the extensive deposit of kaolin at St. Remi d'Amherst, in the Province of Quebec[1].

As a result of the opening up of this valuable deposit, some prospecting was done in the region, with the hope of locating other occurrences of kaolin of workable dimensions; but so far, this search has proved to be fruitless. Prospecting for deposits

[1] Mines Branch Summary Report 1916, p. 105, Geological Survey, Memoir 113.

of this character is carried on with difficulty, owing to the glacial drift which prevails almost everywhere, and to the forest growth which is widespread in the rugged and sparsely settled region where the kaolin is likely to occur, so that boring or test pitting becomes necessary. Surface indications of the presence of kaolin can sometimes be gained by an inspection of the banks and bottoms of rivers and streams during the lowest stages of water.

The occurrence of a small deposit of kaolin in the Gatineau valley has been known for several years. It is situated in the township of Low on an island in the Gatineau river above Plomb falls, 35 miles north of the city of Ottawa.

The kaolin outcrops on the north end of the island where about 2 feet in thickness can be seen for a distance of 200 feet during low water. The kaolin is overlain by river gravels, sand, and boulders, and no bed-rock is visible in the vicinity.

The crude kaolin, when washed, yields about 35 per cent of fine material, which passes a 200-mesh screen. The coarse part of the deposit consists of angular quartz grains, a little weathered feldspar and small quantities of pyrite and mica. The finest washed material is silty, and contains very little true clay substance, consequently its plasticity is low. The washed clay burns to a greyish-white body at cone 7, with a total shrinkage of 15 per cent and an absorption of 13 per cent.

A portion of the washed clay was used in a standard pottery body burned to cone 9, and glazed at cone 6; but the colour was not good, and numerous minute black specks appeared on the surface under the glaze.

This clay would require a more thorough purification, besides simple washing before it could be used in a pottery body.

The colour of the clay is not white enough to permit its use as a paper clay.

The sample tested was taken from the outcrop, and no boring was done on the deposit; so that it is impossible to say anything about its extent, at present.

V.

ALUMINIUM AND ITS SOURCES.

R. T. Elworthy.

Aluminium is rapidly attaining a position of the first rank among those non-ferrous metals which have made possible some of the greatest advances in the arts and industries that the world has seen in recent times.

The preparation of aluminium on an industrial scale has only been carried on for about thirty years. In 1918, over 222,000 tons of the metal were produced.

Its uses are manifold. On account of its lightness—it is only one-third as heavy as steel—and especially of its strength, when alloyed with small amounts of copper and magnesium, it is employed largely in the construction of automobiles and aeroplanes; such as engine parts, and light framework.

Aluminium is employed extensively in the construction of industrial chemical plants, chiefly because of its resistance to the action of all acids except hydrochloric. As it is unaffected by vegetable acids, it is in increasing demand for apparatus used in the preparation of food products, and for kitchen utensils.

The readiness with which aluminium combines with oxygen, and the great evolution of heat in the formation of the oxide, are the basis of several important industrial uses, such as a deoxidizing agent in steel casting, and in the "thermit" welding process. Aluminium powder is a constituent of certain high explosives such as "ammonal," which is composed of 93-97 per cent ammonium nitrate, and 4-6 per cent of the metal.

Many of its compounds are industrially important. The alums, double salts of aluminium sulphate, and some other metals are widely used, such as potassium alum or burnt alum in certain food products, ammonia alum in medicine, and soda alum in the textile and paper industries.

Quantities of aluminium sulphate are used in sizing paper, also as a mordant in dyeing. In water purification, it is used in the form of aluminium hydroxide or hydrated alumina. Aluminium chloride is employed in petroleum refining, and in the manufacture of some organic dyes. Aluminium resinate, aluminium stearate and palmitate, have uses in the varnish and waterproofing trades.

Alumina, the oxide (Al_2O_3), found naturally as corundum, is widely used as an abrasive, on account of its hardness as is also the less pure oxide emery. Sapphires and rubies are essentially corundum, containing traces of impurities, and the artificial production of these gems from alumina is becoming an established industry.

Alumina is also a valuable refractory material. Aluminium silicate is the principal constituent of clays, hence forms one of the chief ingredients in bodies, glazes, and enamels, for the pottery industry.

In the manufacture of paints, aluminium hydroxide is the most important carrier for lake pigments.

PROCESSES OF MANUFACTURE.

Aluminium was not isolated in any quantity until 1854, and the rapid development of its utilization only dates from 1886, when C. V. Hall in America, and Heroult in France, almost simultaneously established on an industrial scale, the present method of preparation by electrolysis of bauxite—the naturally occurring hydrated oxide—dissolved in a bath of molten cryolite (sodium aluminium fluoride).

Electrolytic plants for the manufacture of aluminium exist in most of the principal countries, and usually situated near a source of electric energy. Thus in Canada, the Northern Aluminium Company have a large plant at Shawinigan Falls, Quebec, which produces about one-tenth of the world's supply of the metal.

The following table[1] shows the principal producers in 1918:—

Country.	Metric tons.	Raw Material.	Source.
United States..	102,000	Bauxite.	Georgia, Alabama, and Arkansas.
Canada..	15,000	"	" "
France..	22,000	"	France.
Switzerland.	15,000	"	
Austria..	8,000	"	Austria.
Italy.	8,000	"	Italy.
Great Britain..	14,000	"	France and U.S.A.
Norway..	18,000	"	France and U.S.A.
Germany.	20,000	"	Austria and Germany.

Two recent papers[2] give details of the processes employed in Europe, and describe the method of purification of the raw bauxite; the construction of furnaces; electric circuit and power requirements; composition of bath; and manufacture of carbon electrodes. These processes are essentially the same in all countries.

RAW MATERIALS OF ALUMINIUM.

This pre-eminent position to which aluminium is advancing seems justified when the extent of the distribution of the metal in the earth's crust is considered. Although aluminium is never found in the native state, combined with oxygen and silica, it is very abundant, and is an essential constituent of nearly all rocks.

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[1] Estimated production in 1918. The Mineral Industry, p. 15, 1919.

[2] Aluminium deposits and the production of aluminium, Engineering (London) Vol. 166, pp. 163-165, 191-193, 218-220, 1918. Aluminium Manufacturing Processes used in Europe, O. Nissen, Chem. and Met. Engineering, Vol. 19, pp. 804-805, 1918.

Dr. F. W. Clarke has estimated that it forms 7·84 per cent of the earth's crust, and is therefore third in the list of distribution of the elements—inferior only to oxygen and silicon, and is the most abundant of all metals.

It is a primary constituent of the feldspars and micas, also of their decomposition products—the clays. It widely exists as the oxide corundum, and the hydrated oxide bauxite.

The following table gives a list of the principal common minerals, containing aluminium.

They are seldom found uncontaminated, and are usually combined with other rock constituents. But sufficiently large deposits of relatively pure material for industrial purposes are found in certain localities.

Mineral.	Nature.	Locality.	Alumina content.
Bauxite	Hydrated oxide of alumina	France, British Guiana, Georgia, and Arkansas, U.S.A.	50–80 per cent.
Pure china-clay	Aluminium silicate	England	39
Nepheline syenite	Potassium, sodium aluminium silicate	Ontario	33–22 per cent.
Labradorite	Sodium calcium silicate	Norway, Labrador, Canada	30–27
Glacial clay			10–20

Other important minerals containing aluminium in appreciable quantity are cryolite, diaspore, and alunite; but these are not so widely distributed or abundant as those with a lesser content of aluminium, such as the feldspars. Alunite occurs on Kyuquot sound in Vancouver island, but the occurrence of cryolite and diaspore have not yet been reported in Canada.

Although bauxite has been diligently sought for in those portions of Canada where it is most likely to occur, it has not been found up to the present.

Notwithstanding the varied compounds of aluminium which occur in nature, the metal has up to the present time only been prepared on an industrial scale, from one raw material, namely, bauxite. In 1918, the world's production of bauxite was over 650,000 tons, and probably four-fifths of this was treated for the isolation of aluminium.

It appears interesting to look for the reason of this apparent neglect of the other raw materials comparatively rich in alumina. In the first place, bauxite is the richest ore; in the second place, most of the other minerals contain aluminium as aluminium silicate, usually combined with other silicates. These are very difficult substances to break down into their simpler constituents, and the resulting silica may be difficult to handle. But the problem has been the subject of much investigation, especially during recent years, and a satisfactory solution is by no means impossible.

The two chief sources of raw materials, other than bauxite, that offer the greatest possibilities, are the plagioclase feldspars and high grade clays. The following paragraphs briefly review recent attempts that have been made, using these materials.

THE FELDSPARS AS A SOURCE OF ALUMINA.

Several large works have, for many years, been established in Norway, and produce about 15,000 to 20,000 tons of aluminium annually. Soon after the outbreak of war, in 1914, supplies of bauxite became difficult to obtain, and attention was directed to other sources of raw material. Eventually Professor V. M. Goldschmidt of the Mineralogical Institute, Kristiania, developed a process[1] for obtaining alumina from labradorite, a rock which is very plentiful in southwest Norway, and found relatively pure, containing only small amounts of iron bearing minerals.

[1] Nature. Vol. 104, p. 160, 1919.

Labradorite is a feldspar composed of the silicates of aluminium, calcium, and sodium; it contains about 30 per cent Al_2O_3, and is comparatively easily soluble in acids.

Sulphuric acid was originally used, but the final process in brief was as follows:—

The raw material is treated with nitric acid of about 30 per cent strength, synthetically prepared from nitrogen and hydrogen, by the Birkeland and Eyde arc process. The calcium sodium aluminium silicates are broken down, soluble nitrates of these metals are formed, leaving insoluble silica.

The iron minerals are, for the most part, unacted upon. No details of best conditions for solution and for separation of the silica are given. After iron in the solution is removed, the nitrates are heated until the aluminium salt is decomposed (at a temperature of 140° C. under normal conditions), resulting in alumina and nitrous fumes. The fumes are recovered, and reconverted into nitric acid, when passed through the usual absorption towers.

The calcium and sodium nitrates are washed away from the alumina, and on evaporation, can be utilized as fertilizers. The alumina is dried and calcined ready for addition to the electrolytic bath.

The process appears to be of considerable value, as it is carried on in the vicinity of the nitric acid works, and where cheap material is available.

SUITABLE FELDSPARS IN CANADA.

Large masses of anorthosite, consisting of labradorite with negligible amounts of iron-bearing minerals, are known in Canada in the Provinces of Ontario and Quebec, where workable deposits of relatively pure material could be opened up similar in character to the Norwegian deposits; and the same process for the separation of alumina suitable for aluminium production or for the preparation of aluminium salts would be applicable, according to preliminary laboratory experiments.

Another material which has possibilities of great importance as a source of alumina is nepheline syenite. Nephelite itself contains a relatively high percentage of alumina, according to recent analyses, though the nephelite syenites which form the body of raw material would not run quite as high.

It is more soluble in acids than labradorite, but is not as plentiful.

Deposits occur in Hastings and Haliburton counties, in Ontario, and could be easily worked.

Possible methods of extraction of the alumina and potassium, comprise fusion with alkali and carbon in an electric furnace; solution in nitric or sulphuric acid; or treatment with chlorine, or even carbon dioxide under pressure.

There are no laboratory difficulties; the problem is mainly a technical one of the most efficient treatment consistent with lowest cost; a matter which can only be settled by large scale experimental work. The products would be alumina, potassium salts, and silica, all of which should be of value.

ALUMINA FROM CLAYS.

It will be seen from the table on page 111 that some clays contain almost as high a percentage of alumina as many of the bauxites that are treated as a raw material for aluminium preparation.

Many processes have been proposed and patented to utilize this source of alumina.

But the success of such processes on an industrial scale is still far from being an established fact, and it is certain that success will only be attained by a process using a pure clay as raw material.

The common brick clays, or clays of glacial origin, are of no value whatever. They are relatively unweathered, and contain much undecomposed feldspar, too small an amount of alumina, and relatively large quantities of iron, lime, and magnesia. No process using such clays can offer any hope of success.

A suitable clay must carry little impure material such as silica, magnesium, and iron. The washed china-clay produced at St. Remi d'Amherst, Quebec, is an example of a very pure clay.

Many of the methods proposed, have, as their basis, the action of sulphuric acid on the clay, which after prolonged heating or treatment in an autoclave under pressure, dissolves much of the clay substance. Aluminium sulphate is the chief product, and after separation from the silica and other impurities, it is treated in various ways, and finally calcined to reduce it to alumina.

Other processes treat clay with strong caustic alkali, somewhat similar to the Baeyer method for the purification of bauxite, in which sodium aluminate is formed. From a solution of this compound, alumina can be obtained by the addition of lime, by freshly precipitated alumina, or by carbon dioxide or other gases.

In several of the most promising attempts mixtures of high grade clay or other aluminium mineral, salt or calcium chloride, and carbon in some form, such as charcoal or coke, are subjected to a high temperature in an electric arc or resistance furnace. The sodium aluminium silicates which result are then converted into sodium aluminate by treatment with lime or alkali, and finally into alumina by one of the standard methods.

A recent European process that appeared to have a great chance of success consisted in treating the clay with sulphuric acid, separating the soluble material, chiefly aluminium sulphate, and by adding ammonium sulphate the alum ammonium sulphate was precipitated, this salt being relatively insoluble. It was filtered off and decomposed on treating with ammonia into alumina and ammonium sulphate.

The alumina was dried and made ready for charging into the electrolysing furnaces, or converted into aluminium salts, as desired.

No commercial process utilizing clays as a source of metallic aluminium has yet been successfully developed.

ALUMINIUM SALTS.

Alum, or potassium aluminium sulphate, was an industrial commodity even before the metal was isolated, and the manufacture of alum from alum shales was well established in England and Scotland in 1840.

The chief characteristic of the alum shales found in Yorkshire, and near Glasgow, was their large content of pyrites. After long weathering they were roasted in a copious draught, and the sulphuric acid that formed attacked the clay, decomposing it, and forming aluminium sulphate. The roasted mass was lixiviated, and by fractional crystallization and the addition of potassium or ammonium sulphate alum was separated, in a pure form.

To-day such salts are more readily prepared from bauxite or china-clay by treatment with sulphuric acid.

The manufacture of aluminium sulphate and sodium aluminate salts, widely used in the textile industries, and in water purification, has already been referred to as steps in the purification of alumina.

Most of the other salts of aluminium, such as the acetate or chloride, are also prepared from bauxite, or from the metal itself, but they are relatively of small importance.

VI.

STRUCTURAL MATERIALS IN DUNDAS, STORMONT AND GLENGARRY COUNTIES, EASTERN ONTARIO.

BY

J. KEELE AND L. H. COLE.

INTRODUCTORY.

Instructions were received by the writers, in the early part of 1919, to make a survey of a portion of the valley of the St. Lawrence river in Ontario and Quebec.

This work was undertaken at the request of the Power Board of Canada. The object of the survey was to locate and sample any deposits of materials which could be used for structural purposes, also to enquire into the character of the bed rock and the overlying unconsolidated formations, in so far as they affected the storage of water or the deepening and deflection of the present canal system.

The section investigated during the summer of 1919 lies in the counties of Dundas, Stormont and Glengarry, and consisted of a strip from 5 to 10 miles wide, along the St. Lawrence river between Morrisburg and Lancaster, a distance of 38 miles. As most of the materials of construction should be within wagon hauling distance of the proposed works, it was not considered necessary to go farther from the river than 5 miles, except along the lines of railways running northerly from the river.

It was found, at the outset, that it would be necessary to make a complete geological survey of the district, as no maps of this kind were in existence.

A map showing the bed-rock formations underlying that area in Ontario lying between the Ottawa and St. Lawrence rivers was published, on a scale of 4 miles to an inch, by the Geological Survey, in 1906. As this region, however, is almost entirely covered by unconsolidated material, and the bed-rock outcrops are so very small and scattered, the map was useless for the present purpose.

The unconsolidated materials consist entirely of glacial drift, mostly intact as deposited by the ice sheet which overspread the entire region.

Portions of the drift sheet, however, are modified by water action, either due to streams issuing from the melting ice sheet or to the effect of large water bodies which flowed into the valleys from the sea after the withdrawal of the ice; or, to recent drainage and weathering after the uplift of the region above sea level. It is the washed and sorted products of the glacial drift which furnishes the materials of construction, and these are sands, gravels, and brick clay.

Brick Clays.

The raw material for the manufacture of burned clay products is entirely confined to the stoneless clays washed from the boulder clay or glacial till of the region, and deposited in the deep water estuary which occupied the region during the marine submergence. These clay sediments are restricted in area, and are confined principally to isolated patches along the St. Lawrence river; but some of the patches occupy the floors of depressions extending inland. In the region under discussion these marine clays nowhere form such extensive plains as those along the Ottawa river to the north, or on the St. Lawrence river farther east.[1]

The principal clay deposits, convenient to the river, occur in the townships of Williamsburg and Osnabruck, in Dundas and Stormont counties. The clay in these

[1] Keele, J., Clay and Shale Deposits of Quebec, Memoir 64, Geological Survey, Ottawa, 1915.

localities is mostly exposed on the surface, and not covered by sand, as they often are.

In mapping the area of stoneless marine clay, it is often difficult to determine their extent, as they overlap and emerge into stony clay, so that frequent borings are necessary in order to determine whether a deposit is of sufficient thickness on which to start a clayworking plant.

As the stony clay in this region contains a large number of limestone pebbles, it must be rigorously excluded from brickmaking operations.

The following table gives the results of the physical tests made on the clay samples collected during the season of 1919.

Summary Table of Physical Tests on Surface Clays in Eastern Ontario.

Locality.	Lab. No.	Percentage water required.	Percentage of drying shrinkage.	Cone 010		Cone 06		Remarks.
				Per cent fire shrink.	Per cent absorption.	Per cent fire shrink.	Per cent absorption.	
One mile east of Weaver Point, Dundas Co.	687	26	6	0	14	1	14	Average of bank.
One mile east of Weaver Point, Dundas Co.	687a	22	6	0	14	1	13	Upper portion of bank.
One mile east of Weaver Point, Dundas Co.	687b	30	8·5	0	15	1	15	Lower portion of bank.
From stream bank 1 mile N.W. of Aultsville	689	32	9	0	16	1	14	Good for drain tile.
Bank of creek at Farrans Point, Stormont county	690	25	7	0	16	0	16	Average of bank.
Bank of St. Lawrence river, 1½ mile west of Dickinson's Landing	691	22	5	0	17	0	17	Burned colour is buff.
East end of Sheik island, St. Lawrence R.	692	37	10	1	15	.....	14	Upper 8 feet of bank.
East end of Sheik island, St. Lawrence R.	692a	38	10	1	18	.....	14	Lower 12 feet of bank.
Con. IV, lot 24, Cornwall tp.								
Near quarries 1 mile N. of Moulinette	693	37	10	1	14	3	2	Upper 6 feet of borehole.
Near quarries 1 mile N. of Moulinette	693a	40	10	1	17	5	7	Lower 8 feet of borehole.
Cornwall tp. lot 25, con. VI	694	32	9	0	16	1	14	Good for drain tile.
Osnabruck tp. lot 3, con. IV	695	27	8	0	15	1	14	Upper clay, good for tile.
Osnabruck tp. lot 3, con. IV	696	20	5	0	14	0	14	Lower clay, burns buff.
Charlottenburg, tp. con. I, bank of Grays ck	697	38	13	1	13	6	1	Bloats on fast firing.
Charlottenburg, tp. con. I, bank of Grays ck.	697	.....	8	.....	.....	1	14	1 part sand to 2 parts clay.
Lancaster tp. lot 30, con. V, Glengarry county	698	27	8	1	12	1	13	Good for drain tile.
Cornwall tp. con. V, lot 2, Stormont Co.	699	37	11	0	12	5	1	Cracks in drying.
Charlottenburg tp. lot 3, con. IV, Glengarry county	700	37	10	0	18	3	14	Good for drain tile.

EXPLANATION OF PHYSICAL TESTS.

The clays were prepared for testing, by grinding, wetting, and working them, until the best working consistency for each sample was determined; and then moulded into test pieces 4″ by 1½″ by 1″ in size. The clay requires different quantities of water for mixing, the amount varying according to the texture; the pasty, highly plastic clays requiring more, and the silty, open working ones, less. Lab. No. 691, is an example of the latter type, and 692, of the former. The clays that require a large quantity of water in mixing are generally hard to dry; and any of the clays taking 37 per cent or more of water, will probably crack on drying—when made up into brick shapes and set to dry, and furthermore, shrink too much. The cracking and shrinkage can generally be cured by the addition of sand; and two of the defective samples, namely, Nos. 697 and 699, were treated in this manner, and the figures in the table show that the shrinkage was considerably reduced, and the drying and burning difficulties were overcome.

When the test pieces were thoroughly air dried, they were set in a down-draft, coal-fired kiln, and burned for 32 hours. Standard pyrometric cones and a recording pyrometer were used as a measure of the heat treatment.

It was found that cone 010 went down at about 1,700 and cone 06 at 1,850 degrees Fahr., on the pyrometer.

The character of the burned body at the different temperatures is indicated in the table under the headings "percentage of shrinkage" and "absorption": the effect of the increasing heat being to make the test pieces smaller and denser, in most cases. Vitrification was accomplished in Nos. 693, 697, and 699, at the higher temperature, so that their capacity for taking up water vanished, and the pieces showed high shrinkage values.

The tests indicate that the drying shrinkage of most of the clays is too high, for when the percentage is 8 per cent or over, it is generally necessary to add sand for brickmaking purposes although it may not be always necessary in the case of thin ware like drain tile.

The time occupied in burning has an effect on the character of the burned clay body. If the time of firing is prolonged, a denser body is produced at a given temperature than in a shorter period of firing, hence test kilns do not give quite the same results as commercial kilns. In firing most of the red burning surface clays of Ontario and Quebec, the finishing temperature of the kilns varies from 1,650 to 1,800 degrees Fahr. If the temperature of the kiln should reach higher than this, most of the upper portion of the brick in down draft kilns would be softened and deformed.

Composition of the Clays.

The chemical composition of the clays is not of much importance when testing them for the manufacture of burned clay products, as it gives no indication of how the various clays will behave during the different stages of preparation and burning. It may be necessary, however, to know the composition of the clay if it is to be used as an ingredient in the manufacture of Portland cement along with a suitable limestone or marl.

The following chemical analysis of samples taken from the bank at the east end of Sheik island, in the St. Lawrence river, will furnish a general indication of the composition of most of the stoneless clays of the Ottawa and St. Lawrence valley:—

	692	692a.
Silica (SiO_2)	54·90	53·48
Alumina (Al_2O_3)	18·20	18·06
Iron oxide ($FeO+Fe_2O_3$)	6 64	7·36
Titanium (TiO_2)	0 83	0·84
Lime (CaO)	4 68	4 62
Magnesia (MgO)	2 62	4 62
Potash (K_2O)	3·78	3·33
Soda (Na_2O)	1·36	1·75
Carbon dioxide (CO_2)	1·32	1·46
Water at 105°C	1·68	1·54
Water above 105°C	3 22	2·76

No. 692—Average of upper 8 feet of bank.
No. 692a—Average of lower 12 feet of bank
Analyst.—Mr. A. Sadler, Mines Branch, Ottawa.

The iron, titanium, lime, magnesium, and the alkalies, potash and soda, are the fluxing impurities; while the silica and alumina are the refractory portions. The above clays contain 17 to 19 per cent of fluxing impurities, which make them readily fusible. Fire clays contain only 3 to 7 per cent of these impurities; but there are no clays of this class in the region.

There does not seem to be much difference between the top and bottom portions of the deposit, as regards chemical composition; but there is, generally, a difference in texture, the bottom clay being the coarsest grained.

The amount of lime and magnesia, together present, is quite large, but not large enough to interfere with the development of a good red colour in the burned product. When the amount of lime and magnesia together equals three times the amount of iron present in the clay, it will burn to a buff colour. All the surface clays and most of the underclays in the region, burn to red colours. The two samples of silty, calcareous clays—691 and 696—are both underclays, with a sufficiently high lime and magnesia content to cause them to burn to buff colours.

CHARACTER AND DISTRIBUTION OF BRICK CLAY.

The upper portion of the marine, stoneless clays, is usually quite plastic and smooth, and works up into a very stiff paste when wet. It dries slowly and shrinks greatly in drying, hence bricks made from it are very liable to crack before drying is completed, unless sand is added.

The bottom parts of the deposits are generally more silty, so that they are not so plastic as the top. The lower layers are, moreover, likely to contain more lime, as much of the lime may have been leached out of the upper layers by weathering. Number 691 is a typical example of a silt which was never subjected to weathering.

A material of this kind is of very little use, by itself, in the clay working industry, as the wet body being only feebly plastic is not very coherent, and shapes made from it become deformed when released from the moulds; but silt and a stiff plastic clay, when mixed together, often give better results than when either of them is worked alone.

The clays along the St. Lawrence river between Riverside and Aultsville, are, in places, quite sandy or silty in the upper part, particularly near the old brickyard site a little east of the Crysler monument, and at the shore on lot 3 of Williamsburg township, where sample 687 was collected. The upper part of the bank at this point, owing to its sandy texture, has a lower drying shrinkage than the bottom clay, the reverse of what generally occurs in these deposits; but the upper part of the deposits, at this particular locality, has been modified by the work of the river when it stood at a higher elevation and before it had cut down to its present bed.

The strip of sand which lies north of the clay bed in this locality is also a river deposit, but a good deal of sand has also been deposited on the clay, and mixed with it by the river currents.

The top and bottom portions of the bank, when mixed, give a good brick material which does not need the addition of sand; but for tile making, a larger proportion of the bottom clay would have to be used, in order to obtain a stiffer mixture which would not deform when coming from the die of the machine, particularly when making the larger sizes of drain tile, such as 8-inch.

There is quite a large deposit of clay just north of the village of Farrans Point, where the sample 690 was procured from a cut bank 9 feet high on a small creek, representing the average of the deposit from top to bottom. This is a good brick material, as it is not so stiff working as most of the marine clay, and has a reasonable shrinkage. It appears to contain quite a percentage of lime, as the burned colour is pale, and not a good red, on account of the bleaching action which the lime exercises on the iron during firing. This clay is scarcely strong enough in the wet state to make round tile, except the smaller sizes. The two patches of stoneless clay along Doherty brook north of Dickinson's Landing, in Osnabruck township, contain brick and tile clays of a strong plastic character; but most portions of these deposits are too shallow in depth to admit working them; there are, however, quite thick beds near the Grand Trunk Railway track.

Some of the clays are more recent than the marine clays, and appear to have been washed into swampy depressions as the marine waters receded from the areas. Some of these sediments are mixed with peaty matter, consequently, are liable to bloat in burning, if the firing is done too fast. They are very pasty when wet, consequently have bad drying qualities and abnormal shrinkages, in drying and burning.

Samples 693, 697, and 699, are examples of this class of clay, but such clays are considerably improved by the addition of a liberal quantity of sand, as indicated in the table where the results of two of the clays thus treated are given next to the corresponding number without sand additions.

The clay exposed in the cut below the sluiceway at the east end of Sheik island, in the St. Lawrence river, was chosen as an example of a typical deposit of marine stoneless clay, easily accessible for sampling, but this particular locality would not serve for practical purposes.

Physical tests and chemical analyses are given from both the upper and lower part of the deposit, and these results are representative of similar material which occurs widespread in the Ottawa and St. Lawrence valley.

There are several small isolated areas of stoneless clay along the Raisin river and its branches in Glengarry county. An extensive flat occurs to the south of the Raisin river, in the township of Charlottenburg. This area is mostly covered by sand, but the sand appears to overlie a sheet of stoneless clay, because the clay is seen at the surface in some places, and also at many points under the sand along the banks of streams flowing through the area. It would be difficult to utilize the clay in some parts of this area, as the covering of sand and sandy loam is too thick. Another disadvantage of trying to work clay in low ground is, the difficulty of keeping water out of the pits.

Gravels.

The gravel supply of the district is chiefly obtained from raised sea beaches, which are mostly situated at the 300-foot level, or, from 100 to 150 feet above the levels of the St. Lawrence river. As the portion of land which stood above what is now the 300-foot level was confined to a group of small scattered islands, where the sea water washed them, the amount of gravels formed was consequently limited to small isolated deposits.

Furthermore, these deposits, in addition to being small, are mostly situated beyond wagon haulage distance from the river, hence cannot be relied upon as an

important source of concrete material. They are worked, however, at various points as local supplies for the maintenance of roads, and for building barn foundations.

Apparently, when the water fell below the 300-foot level, the sea was too shallow and the land too flat for any effective wave work to be accomplished, consequently the gravels are either missing or consist only of a layer generally not more than a foot in thickness, and are now obtained just below the surface soil. Notwithstanding the small amount of gravel in these thin sheets, they have been utilized at many points for road maintenance.

Many of the larger gravel deposits are limited in their usefulness, owing to the high percentage of cobble stones and boulders intermingled with the finer materials, which are too large to enter into the composition of a concrete mixture, hence the local users, in the absence of a stone crusher, are forced to reject considerable quantities of most of these deposits.

It is probable, then, that in view of the vast quantities of concrete required for the proposed works the engineers will have to rely on crushed stone derived from rock outcrops close to the river, such as those in the vicinity of Cardinal: the crushed stone being brought down in barges to the points where required. A large amount of field stone could also be assembled at mostly any chosen locality along the river front, but for short land hauls of this kind of material some points are more favourable than others.

Sand.

The sand areas, like the marine stoneless clays, are confined to the lower elevations of the regions. In the township of Williamsburg, in Dundas county, the sand areas are close to the St. Lawrence river, on terraces standing at an elevation of 225 to 250 feet. The sands on the narrow terrace bordering the river between Farrans Point and Dickinson's Landing, in Stormont county, are from 200 to 225 feet in elevation, while the largest areas of sand in the region are those in Glengarry county, lying on plains about 175 feet above sea level.

The position of these sands and the slope of their surface seem to indicate that they were laid down by the St. Lawrence river, when it stood at a higher elevation. The sand from deposits of this nature in this district are essentially fine in texture, having an average fineness of about 80; the greater part of the grains consists of quartz, with each grain well rounded. Due to the continual washing by the river, the greater proportion of the limestone which one would naturally expect to find in sands in this district, has been removed.

The numerous beaches which have been built up by wave action on the slopes of the boulder ridges of the district, at the 300-foot level, or higher, contain quantities of sand, mixed with the larger gravel material. This could be screened to supply small amounts of sand for concrete, but could not be relied upon for large tonnage. Unlike the river terrace sands, this material has not been subjected to much erosion, hence the grains are subangular to angular. A large percentage of the grains is composed of limestone.

A few scattered deposits of glacio-fluviatile material are to be found in this district, but it is doubtful if they will furnish any considerable tonnage for concrete construction. Like the sands in the beach deposits, they are composed, for the most part, of limestone grains, but are more rounded.

A number of typical samples of sand from this district were collected and tested for concrete. The results of these tests are given in the following tables:—

Granulometric Analyses of Sands from Localities in Eastern Ontario.

Sample number.	1907	1908	1912	1913	1917	1918	1925	1928	1929	1930	1931	1932	1933
Cumulative per cent.	%	%	%	%	%	%	%	%	%	%	%	%	%
Retained on 4 mesh	.....	.....	.....	1·81	.....	.....	9·40	.....	2·90	5·47	.....	.....	10·16
" 6 "	.....	.....	.....	3·22	.....	.....	17·05	.....	6·35	10·84	.....	.....	18·67
" 8 "	.....	.....	.....	4·92	.....	.....	23·55	.....	10·25	18·89	.....	.....	26·53
" 10 "	.....	.....	.....	7·02	.....	.....	29·65	.....	17·15	28·64	.....	.....	36·04
" 14 "	.....	.....	0·45	10·82	.....	.....	33·25	0·60	23·85	37·64	.....	1·05	44·05
" 20 "	.....	.....	1·06	20·97	0·15	.....	38·45	1·30	34·15	45·09	.....	1·45	53·20
" 28 "	0·40	0·35	1·81	42·53	0·35	.....	44·20	1·95	47·50	53·94	.....	2·15	62·81
" 35 "	0·90	1·43	5·81	67·83	1·00	0·10	54·61	9·35	62·20	64·87	0·45	7·45	77·41
" 48 "	5·50	6·68	18·11	83·26	2·66	1·10	69·96	22·25	76·86	76·57	5·31	29·50	88·36
" 65 "	29·95	30·60	43·76	89·41	7·26	16·10	84·26	51·10	86·61	85·72	30·42	56·65	93·06
" 100 "	77·56	71·91	74·01	92·95	38·26	63·68	93·52	87·06	93·16	93·02	68·68	79·50	95·06
" 150 "	88·32	87·51	81·94	93·80	61·16	76·12	95·37	93·97	95·91	94·77	78·19	85·85	95·51
" 200 "	98·03	97·11	93·34	94·20	93·21	91·76	96·88	98·81	97·86	97·39	91·50	94·35	96·31
Average fineness	73·33	74·79	76·08	36·22	107·56	90·80	34·60	59·99	33·65	32·33	84·64	67·33	25·91
Character of sand	a	a	a	b	a	a	b	a	c	c	c	c	b

a. Terrace sand.
b. Beach sand.
c. Glacio-fluviatile.

Summary Table of Tests of Sands from Localities in Eastern Ontario.

		1907	1908	1912	1913	1917	1918	1921	1925	1928	1929	1930	1931	1932	1933
Per cent of gravel. Material retained on 3 mesh		Nil.	Nil.	Nil.	11·86	Nil.	Nil.	Nil.	24·83	Nil.	5·18	14·67	Nil.	Nil.	21 97
Per cent sand. Material passing 3 mesh		100·0	100·0	100·0	88·14	100·0	100·0	100·0	75·17	100·0	94·82	85·33	100·0	100·0	78·03
Per cent silt in sand		2·90	3·15	8·20	2·37	5·45	4·30	5·35	5·35	3·35	2·45	3·85	5·40	5·50	3·25
Sp. gr. sand		2·61	2·70	2·63	2·70	2·70	2·63	2·63	2·70	2·61	2·63	2·70	2·77	2·77	2·70
Wt. per cu. ft. of sand		89·15	86·75	92·15	95·51	87·81	88·70	88·11	98·07	92·19	102·3	106·1	89·87	92·15	101·2
Per cent voids in sand		45·3	48·4	43·8	43·2	47·8	36·5	46·3	41·7	43·5	37·5	37·0	48·0	46·7	39·9
Tensile strength of sand:-- Average of 3 briquettes, lbs. per sq. in.	7 days	69	68	90	255	44	61	.....	167	89	267	292	90	123	282
	Per cent sample / standard	41·05	40·5	53·6	151·8	26·2	36·3	.....	99·4	53·0	158·9	173·8	53·6	73·2	167·8
	28 days	118	120	150	352	77	133	.....	288	166	394	413	187	213	366
	Per cent sample / standard	39·6	40·3	50·3	118·1	25·8	44·6	.....	96·7	55·7	132·2	138·6	62·7	71·5	122·8
Compression strength of sand:-- Aver. of 3 cyls. (2" dia. × 4" high) per sq. in.	7 days	668	530	902	2,196	307	657	.....	1,570	774	2,397	2,938	764	986	2,673
	Per cent sample / standard	48·8	38·8	65·9	160·5	22·4	48·0	.....	114·8	56·6	175·3	214·8	55·7	72·1	195·4
	28 days 986		1,029	1,379	3,670	557	1,007	.....	2,514	1,507	3,777	4,307	1,442	1,814	3,893
	Per cent sample / standard	43·7	45·5	61·1	162·5	24·8	44·6	.....	111·3	66·7	167·2	190·8	63·8	80·3	172·3

DESCRIPTION OF SAND SAMPLES.

Sample No. 1907.—Locality: south half lot 37, concession I, township Osnabruck, Stormont county.

This sample was taken from drillings with post hole auger, through 6 feet of sand, from top to bottom of dune.

Sample No. 1908.—Locality: lot 7, concession I, township Williamsburg, Dundas county.

Taken from drillings from post hole auger, from top to bottom of dune, 8 feet in depth.

Sample No. 1913.—Locality: lot 23, concession VIII, township Cornwall, Stormont county.

A prominent boulder ridge running N.E. and S.W. is flanked on the N.W. by a steep pitching beach ridge. A pit has been opened up on this beach, and a small amount of gravel was obtained. To the southwestern part of the pit, about 4 feet of sand has been exposed, nicely stratified, and covered by about 2½ feet of gravelly till. The bottom of the sand was not exposed, nor was its continuation to the southwest determined, as it was covered. The sample was taken vertically down the face of the exposed layers.

Sample No. 1917.—Locality: lot 22, concession I, township Williamsburg, Dundas county.

Sample taken from borings from auger drill in dunes to southwest corner of cemetery. The sand was of uniform texture throughout the whole 8 feet drilled.

Sample No. 1918.—Locality: lot No. 15, concession I, township Osnabruck, Stormont county.

Sample taken from bank of St. Lawrence river from 12-foot section of sand overlying clay. The top 3 feet of the sand was iron stained, and reddish in colour, below which, for 7 feet, a clean, greyish sand was obtained. The bottom 2 feet was slightly clayey.

Sample No. 1925.—Locality: lot No. 23, concession I, N.S.R., township Charlottenburg, Glengarry county.

Sand and gravel pit owned by Frank Lefevre. This is a well developed beach ridge, built upon the western end of a boulder ridge. Stratification is well marked wherever a face is exposed, and shells are abundant throughout. The sample was taken from a loaded rig, which was drawing material for concrete from this pit.

Sample No. 1928.—Locality: lot No. 6, concession I, township Osnabruck, Stormont county.

Sample taken from sand pit opened on east side of road opposite cemetery. The sand contains numerous shells.

Samples Nos. 1929-1930-1931-1932.—Locality: north half lot 5, concession IV, N.S.R., township Charlottenburg, Glengarry county.

This deposit is probably of glacio-fluviatile origin, and is composed of sand and gravel, covered in places with a thin layer, 12 inches thick, of beach material carrying shells. No shells were to be found in the material sampled. Four samples were taken from different parts of this pit to represent four different grades of material. No. 1929—Fine gravel with sand; No. 1930—Coarse gravel with sand; No. 1931—Fine sand; No. 1932—Coarse sand.

Sample No. 1933.—Locality: lot 6, concession VIII, township Charlottenburg, Glengarry county.

There is a pit opened on this property on a ridge of considerable extent. It rises fully 40 feet above the gully. Shells are abundant, and there are considerable quantities of coarse material. General sample taken.

EXPLANATION OF PHYSICAL TESTS ON SANDS.

The samples of sand tested, averaged about 20 pounds in weight. These were passed through the 3-mesh screen, and the material retained on this screen was called gravel, while that passing through was called sand. The results of the tests tabulated in the accompanying tables were obtained from the material passing through the 3-mesh screen.

GRANULOMETRIC ANALYSIS.

In all cases, 100 grams of the sand to be tested, was employed. The results obtained from this test give one an idea of the texture of the sand with regard to the size of grain. The test was carried out as follows:—

The 100-gram sample was placed on the coarsest screen, which was nested on the next size finer, and so on down to the 200 mesh, with retaining pan on bottom. The nest of screens was then thoroughly shaken on a mechanical shaker for 10 minutes: the material retained on each screen being collected, weighed, and noted. The sample, in the first place, being 100 grams, the weight recorded as retained on each screen is the percentage retained on that screen and passing through the next size larger; and the cumulative percentage, or the percentage of all material that would be retained on any given screen, if that screen alone were employed, can readily be determined by totalling the weights retained on all coarser screens.

The results obtained in these tests are tabulated as cumulative percentages in the accompanying table.

To gain an idea of the fineness of the grain of the sand, and to be able to express this in one figure for purposes of comparison, the average fineness of each sample was calculated. This was determined as follows: The quantity of material passing through each screen and retained on the next smaller is multiplied by the mesh of the screen passed through. The results thus obtained are totalled, and divided by 100, the final result being the average fineness. In other words, if all the grains of the sample were brought to an average size, they would just pass through a screen whose mesh was equal to the average fineness of the sample.

PERCENTAGE OF SILT AND CLAY.

The percentage of silt and clay was determined by the elutriation method: 100 grams of sand being used in each case. The weighed sample of sand was placed in a glass vessel and subjected to a rising current of water of constant head which carried off the silt and clay. While the water being siphoned off was clear, the material remaining in the vessel was dried to constant weight and weighed, and the percentage of silt and clay calculated.

SPECIFIC GRAVITY.

The specific gravity was determined by means of a Le Chatelier specific gravity flask. The bulk of the flask was filled with water, and the height of the column of water read on the graduated stem. Fifty grams of sand were admitted, care being taken to permit the escape of the air; and the new height of the water column read. The difference in the two readings gave the volume of water displaced by 50 grams of sand. From this data the specific gravity of the sand was computed.

WEIGHT PER CUBIC FOOT AND PERCENTAGE OF VOIDS.

The weight per cubic foot, and the percentage of voids, was calculated from the weight of 500 c.c. of sand. The method of obtaining the weight of 500 c.c. of sand was as follows:—Two brass cylinders were used, one having a volume of exactly 500 c.c. and the other with an outside diameter slightly smaller than the inside diameter of the first one, but twice as long. The longer cylinder is filled with sand, and the 500 c.c. cylinder is inverted over the top of it. The two cylinders are then inverted and the long cylinder withdrawn leaving the sand in the graduated cylinder. The sand was then struck off level, and the amount of sand in the 500 c.c. cylinder weighed. The weight per cubic foot when calculated will probably be lower than when other methods are employed for compacting the sand in the 500 c.c. cylinders; but it was found that the results obtained on the same sand, when this method was used, were so uniform, even when different operators performed the test, that it was thought advisable to adopt it.

The percentage of voids calculated from the weight obtained by the above method will also, for the same reason, be higher than when other methods are employed.

TENSILE STRENGTH.

The tensile test was made in the usual manner on briquettes similar to those used in standard cement testing, using a 1:3 mixture. Three briquettes were broken at 7 days and three at 28 days, and compared with briquettes made of the same cement and standard Ottawa sand.

COMPRESSIVE STRENGTH.

The compressive tests were made on mixes of 1:3 mortar, using the same cement with the different sands to be tested. Cylinders 2" by 4" were employed and breaks were made at 7 and 28 days, and compared with standard cylinders, run concurrently.

An examination of the tabulated results of all these tests shows that the finer sands make poor concrete material. As a general rule, if there is no organic matter present, and the percentage of silt and clay is low, a sand which has 75 per cent retained on the 48 mesh will make a good concrete: one that would be safe to employ, with a coarse aggregate, for concrete work. A good sand should have a strength at least equal to the standard, at both 7 and 28 days.

CONCLUSIONS.

There are three sources of sand in this district, namely from (1) River terrace and dune sands; (2) Sand from beach deposits; (3) Glacio-fluviatile sand.

1. *River Terrace and Dune Sands.*—These are mostly very fine in texture and contain appreciable quantities of silt and clay. They are totally unsuited for use in structural work.

2. *Sand from Beach Deposits.*—There are numerous beach deposits built by wave action on the slopes of some of the morainic ridges which occur in this region. These are generally small in extent and could not be depended on to furnish any considerable quantities for concrete. These beaches generally contain a large proportion of coarse material and the texture of any one beach will vary in different parts. As a rule the sand from a deposit of this nature will make a good concrete mixture. Good examples of this class of deposit are Samples No. 1913 and No. 1925.

3. *Glacio-fluviatile Sand.*—Glacio-fluviatile deposits of sand and gravel are to be found in a few places in this district. The coarser material found in these deposits make a good grade of concrete and the finer sand would also be suitable for concrete

when mixed with a coarser aggregate. The deposits are of small extent, however, and cannot be counted on for any large tonnage.

Bed-rock.

An earthy mantle of unconsolidated glacial drift, varying from a few feet to 150 feet thick, covers the bed-rock almost everywhere in the region.

The St. Lawrence river has not quite succeeded in cutting down through this cover so that no outcrops of rock are visible on its banks in Dundas, Stormont, or Glengarry counties. In a few portions of the channel, however, an occasional patch, which stands at a higher level than the rest of the bed-rock bottom, is being scoured by the water; but everywhere else the river is flowing over clay, sand, or gravel.

A good deal of information regarding the position and character of the bed-rock under the river channel, was obtained during the last two years by means of the series of diamond drill borings made by the Hydro-Electric Power Commission of Ontario, between Morrisburg and the New York state shore of the river.

Similar information has been obtained from borings made by the engineers of the Department of Railways and Canals, and of private companies, in other parts of the river channel.

The chief information regarding the character of the bed-rock on land was obtained from small scattered outcrops, where quarries had been opened in past years to supply building stone.

Although the amount of bed-rock accessible for inspection is meagre, certain generalizations can be made regarding its character as a whole.

The rocks of this portion of the St. Lawrence valley are made up entirely of nearly flat lying beds of more or less pure limestones, magnesian limestones, dolomites, shaly limestones, and a minor amount of shale. In age they include four subdivisions of the Ordovician rocks, viz., Beekmantown, Chazy, Black River, and Trenton.

The lowest formation, the Beekmantown, is not exposed at the surface within the area, but borings made by the Hydro-Electric Power Commission in the bed of the St. Lawrence river at Morrisburg, to a depth of 40 feet in bed-rock, seem to have pierced these rocks. They consist of dense grey magnesian limestones, with a very small amount of black shale. An inspection of some 45 drill cores from this locality shows that a typical section is as follows:—

BORE-HOLE No. 10.

Depth.				Description.	Thickness.	
ft.	in.		ft. in.		ft.	in.
0	0	to	2	3..Coarse grained, dark grey limestone, crystalline in texture (probably magnesian)	2	3
2	3	"	5	0..Dark grey, fine to medium grained magnesium limestone	2	9
5	0	"	7	0..Fine grained, grey, magnesium limestone	2	0
7	0	"	9	6..Fine grained, dark grey, shaly limestone	2	6
9	6	"	10	0..Fine grained, grey limestone	0	6
10	0	"	13	3..Dark grey, shaly limestone	3	0
13	3	"	15	0..Fine to medium grained, compact grey limestone (probably dolomitic)	2	0
15	0	"	16	0..Dark grey to black shale	1	0
16	0	"	20	0..Compact, fine grained, grey limestone	4	0
20	0	"	22	6..Fine grained, flinty, light grey limestone	2	6
22	6	"	26	0..Fine grained, dark grey, shaly limestone	3	6
26	0	"	27	0..Fine grained, dark grey, compact limestone	1	0
27	0	"	30	0..Fine grained, dark grey, shaly limestone	3	0
30	0	"	31	6..Fine grained, dark grey limestone with calcite and pyrite seams, (probably dolomitic)	1	6
31	6	"	35	0..Dense, fine, grey limestone	3	6
35	0	"	37	7..Medium grained, grey limestone with secondary calcite, mottled with dark grey patches (many small cavities)	2	7
37	7	"	37	9..Black shale band	0	2
37	9	"	39	7..Medium grained, grey limestone with secondary calcite, mottled with dark grey patches	1	10
39	7	"	40	0..Dark grey, fine grained, magnesian limestone	0	5

It should be noted that the variation in the chemical composition of the rock does not affect its physical character, for dolomites are often to be preferred to limestones for certain classes of structural work.

The dark shales are slaty in character, hence do not slake in water even when crushed and ground. A clay shale slakes readily, and becomes plastic under this treatment.

The sections of these rocks obtained in the drill cores show no defects from an engineering standpoint.

There is no trace of weathering—the top of all the cores being just as fresh and unweathered as the bottom.

There are no open seams or cracks, neither vertical nor horizontal. Each bed or layer of rock is solidly welded to the one above and below it. The vertical joint planes are tight and impervious.

There is very little siliceous material present, consequently there are no sandstone beds or layers which might prove to be porous, but not necessarily so.

The Chazy, the next formation in ascending order, is nowhere exposed in the region so far examined, but, according to Dr. Ells, is present at depth.

The Black River formation overlies the Chazy. A typical outcrop of this formation is to be found three-fourths of a mile east of Bouckshill, lot 21, concession V, township Williamsburg, Dundas county, Ont. These rocks consist of dark grey to grey, compact, fine grained limestones generally carrying numerous fossils. The beds are usually of sufficient thickness to enable large blocks to be quarried for building purposes.

The Trenton formation can be seen in several outcrops in the area so far investigated; a good example of this formation being exposed at the Mille Roches quarries. From these quarries great quantities of large dimensioned pieces have been excavated in past years for canal construction. This formation consists mostly of fine grained limestone, dark in colour, with numerous small fossils scattered through the rock. Exposed to the weather, it turns much lighter in colour, and gradually exhibits wavy disintegration along the planes of bedding. This characteristic can be plainly seen in the blocks which are lying around the abandoned quarries.

In the territory so far examined, there are several localities where building stone could be obtained in sufficient quantities for use in large construction work, but not always convenient to rail or water transportation.

The data obtained so far do not give any indication of a deep pre-glacial channel buried beneath the glacial drift in the St. Lawrence valley.

VII.

POTTERY CLAYS.

Mary Etta Young.

The chief material used by the potter is clay. Its characteristic quality—plasticity—enables the wet clay to be moulded into any desired form and to retain this form when dried and during burning. In most of the methods used in making art pottery, it is necessary to use a highly plastic clay, smooth in texture.

Practically all of the clays used in modelling by sculptors and art students in Canada, are imported either from the United States or England. They are of the stoneware type, being highly plastic and smooth, and much cleaner to manipulate than the common brick or tile clays. We have similar clays available in Nova Scotia

and Saskatchewan, Canada; but none are known to occur in the other provinces, within the present range of transportation facilities. All clays require a certain amount of preparation after mining, before they can be sold for use to art schools, sculptors, or studio potteries; but there are no firms engaged in mining, preparing and selling clays for these purposes in Canada.

Many of the clays tested at the Mines Branch Laboratory show sufficient plasticity and smoothness to indicate that they might serve as modelling clays: such as those used in our technical schools, or as pottery clays. Especially is this true of the above-mentioned clays from Saskatchewan and Nova Scotia.

A clay to be tested as to its suitability for the manufacture of pottery, first undergoes the regular tests as to shrinkage, drying, range of fire, and burned colour. Its behaviour on the wheel, for casting, and for building, then remains to be determined.

For making pottery by the casting process, the clay is mixed with an excess of water, and run through a 60-mesh screen. It is then known as a slip. This slip is allowed to stand for a day, then the excess water is siphoned off. Part of the slip is set aside to be used for casting, while the remainder is poured into plaster dishes, and left there until enough water has been absorbed by the plaster to bring the clay to the proper consistency for wheelwork and building.

The casting slip is brought to the consistency of cream, and is then poured into a plaster pottery mould, and allowed to stand a few minutes, after which, all that can run is poured out. The remainder—which adheres to the mould in an even layer—shrinks away from the mould surface on drying, and is easily removed. The cast piece is then smoothed and finished by hand. This casting process is used to a large extent in commercial work.

The clay may then be tried out on the wheel; and also as to its adaptability for built ware. Pieces made by these methods are allowed to dry, and, together with the cast ware, are fired to a temperature ranging from 1,880 to 1,990 degrees Fahr. (Cone 06 to cone 03). The fired pieces of pottery before being glazed are known as biscuit ware.

Tiles may be made by pressing ground, semi-dry clay into steel moulds, either by machinery or by pressing the clay while in the plastic state, into plaster moulds. Tiles made from clay only, nearly always show a tendency to warp in drying; to obviate which, ground calcined clay or sand is added to the clay.

The biscuit pieces that are cracked or warped are rejected, and perfect pieces are glazed and refired. When the glaze is examined, it is usually found to be crazed or cracked on many of the pieces.

Most clays require the addition of a non-plastic material, such as finely ground feldspar or quartz, before they can be made up into a satisfactory earthenware body that can be properly glazed. Therefore, a clay which promises to prove suitable for pottery work, is further tested by adding to it various proportions of feldspar, or flint, until the most desirable mixture or body is attained.

Flint is the common name that potters give to finely pulverized quartz, no matter whether it is produced from true flint or white sand.

The test pieces made from the above mixes are fired and afterwards glazed with a raw transparent glaze. It will be found, almost invariably, that the glazed pieces containing nearly all clay, those containing clay and feldspar alone, and those containing a large amount of feldspar, will be crazed. From such tests it is possible to determine the proper proportions of feldspar and flint it is necessary to add to the clay.

Glazes and Enamels.

The terms "glaze" and "enamel" are often used to signify the same thing. Strictly speaking, however, a glaze is transparent, and will show the colour of the body beneath. Enamels, often called majolica glazes, are opaque, and conceal the character of the body to which they are applied.

As pointed out above, the character of the body materially affects the behaviour of the glaze. In addition to crazing or cracking, the glaze may develop bubbles or blisters, or may shiver or crawl during firing. The crawling is due to excessively fine grinding of the glaze, or to an excess of clay; but the other troubles are seldom due to the glaze itself and can usually be remedied by modifications of the body, and proper attention to the firing.

TRANSPARENT GLAZES.

The clear, transparent glaze used on trial pieces in the Ceramic Laboratory of the Mines Branch has the following composition:—

White lead	168 parts.
Whiting	25 "
Feldspar	56 "
Kaolin	13 "
Flint	36 "

These ingredients, carefully weighed, are ground wet in a ball mill for 2 hours, then sieved through a 150 mesh, and brought to the consistency of a thick cream. The piece to be glazed is soaked to saturation in water, and then dipped into the glaze. When it is found difficult to obtain an even coat of glaze by dipping the glaze is sprayed on. The glazed piece is then fired in an oil kiln to about 1,900 degrees Fahr.

For coloured, transparent glazes, blue tones are secured by the addition of a small quantity of cobalt oxide to the above ingredients, before grinding. For greens, copper oxide is used; and for browns, iron oxide. Combinations of two or more of these metallic oxides added to the clear glaze will give a further range of colours: many beautiful effects can be obtained by such mixtures.

OPAQUE GLAZES OR ENAMELS.

Tin oxide added to a transparent glaze gives an opaque glaze of corresponding colour. These glazes are called tin enamels. A very pleasing shade of blue, to be fired at 1,950 degrees Fahr., has the following composition:—

White lead	155 parts.
Whiting	15 "
Feldspar	97 "
China-clay	2 "
Flint	30 "
Tin oxide	74 "
Cobalt oxide	4 "

MATT GLAZES.

The matt, or dull glazes, are produced by an excess of alumina or silica in the glaze. The alumina matt is the more easily handled glaze, and is produced by increasing the clay content and decreasing the flint in a clear glaze formula. Matt glazes require less grinding than the transparent glazes, and a thicker coat of glaze must be applied to the biscuit ware.

COLOUR DECORATION.

Two methods of decorating pottery with coloured patterns are (1) underglaze, and (2) overglaze.

The underglaze colours are applied to either the unburned or biscuit ware, and the colour is burned on. A coat of clear glaze is then applied, and the ware given a final firing. Underglaze decoration is a true ceramic method of decoration, since, after the final firing, the body, colour, and glaze are fused together. In underglazing, firing takes place at high temperatures, ranging from 1,800 to 2,500 degrees Fahr., and taking anywhere from 6 hours to 6 days to accomplish.

In overglaze work the decoration is applied to a piece already glazed. The colour, in this case, requires to be fixed by firing; but the temperature used in overglaze firing is much lower than for underglaze.

In ordinary china painting, the colours are applied to a piece that has been commercially glazed, hence they only require to be fixed at a low red heat, which is attained by about two hours' firing.

TYPES OF POTTERY.

Art pottery includes the low fired buff, or red burning ware, as well as the high fired white, translucent porcelains. Perhaps the finest type of pottery being made from a ceramic point of view is the porcelain manufactured in Copenhagen, Denmark.

Porcelain is made from a combination of china-clay, feldspar, and flint. It is biscuited at a low fire, then glazed, and refired at a high temperature.

The only deposit of china-clay known to occur in Canada is found at St. Remi, Quebec. It is high grade, and compares favourably in colour and texture with the standard brands on the market; although its shrinkage on burning is rather high. A great deal of the feldspar used in the United States potteries is imported from the provinces of Ontario and Quebec.

Much art pottery, however, is made of stoneware clay. This burns to a very hard, opaque body, which may be white, buff, or grey. Both body and glaze are fired to a temperature of 2,400 degrees Fahr., approximately. The Rookwood and Fulpar potteries in the United States and the Ruskin pottery of England are of this type.

Earthenware and majolica wares have a soft, porous, opaque body, and the colour varies from a deep cream to buff and red. From an art standpoint, this ware may be quite as good as the most expensive porcelain. The ware is glazed with a coloured transparent glaze or an enamel. Some of the clays tested in the Mines Branch could be used for the manufacture of wares of this type.

All the art pottery sold in Canada, at the present time, is imported, principally from England, Japan, and the United States. Small industries of this kind should prove profitable at points where suitable clays occur, and where there is a considerable tourist trade.

British Columbia.

Chimney Creek, Cariboo.—White residual clay from this locality, when washed and screened, makes a good casting body; but shrinkage is excessive. It fires to a dense, cream coloured body at cone 03, which takes a glaze well; and no crazing is developed on glazed pieces. This clay would form the basis for a pottery body, but a certain amount of flint and feldspar should be added to reduce the shrinkage, and a white burning plastic clay, such as that which occurs at Quesnel, should be added in order to improve its working qualities.

Terrace and Lakelse.—Extensive deposits of surface clay are said to occur in these localities. Their suitability for brick and tile has already been referred to in this report. Inasmuch as they are smooth and plastic in the raw state, their use is suggested for flower pots, and for ornamental pottery. These clays work well either on the wheel, or for casting, and their drying qualities are good, and shrinkage low. Specimens of pottery made from them, burned to a dense red body at 1,750 to 1,800 degrees Fahr. The pieces glazed with coloured tin enamels had good texture, and little or no crazing was developed. The glazed pieces were burned to the softening point of cone 06.

Alberta.

The best pottery clays in the province of Alberta occur on the Athabaska river and its tributaries north of Fort McMurray. They are buff and grey burning clays,

of the stoneware type, found in association with the tar sands. One of the samples tested for pottery was found to be an excellent wheel clay, but made a very poor casting slip. It had good drying qualities, and when fired to cone 05, had a good hard body, of dark buff colour. The ware made from it was easily glazed with either enamels or transparent glazes, and no faults whatever developed.

Saskatchewan.

Willows.—A considerable amount of clay was excavated at Willows, and sent to the sewer pipe works at Medicine Hat. The run of bank at this point, when washed and screened, makes a good pottery clay for either the wheel or for casting. It is very plastic and smooth, and dries without difficulty. When burned to cone 03, the body is hard, and nearly white in colour. The glazed pieces showed slight crazing; but if the body were burned to a higher temperature before glazing the crazing would probably be overcome. This would make a good modelling clay for school use.

East End.—Two samples of clay from this locality, were tested; one, a white washed clay used by the Medalta Pottery Company at Medicine Hat, the other a dark grey clay, which occurs in the bank worked by the pottery company.

The white clay was made up into three separate casting slips as follows:—

A. Clay alone.

B. 75 clay
22 flint.
3 whiting.

C. 55 clay
40 flint
5 whiting.

All the mixtures made good cast ware. The object of using the whiting was to offset the effect of the flint, which tends to make the body too porous and soft when burned at low temperatures.

The trial pieces were biscuited at cone 04 (1070° C.). The burned tests ranged from A, which had a dense body of deep cream colour, to C, which was lighter in colour and more porous. These tests were glazed with a transparent green glaze, also with commercial glazes from Wengers, England.

No crazing or other glaze faults developed in these glazes.

The dark grey clay occurring at East End, was washed and screened at the laboratory, and made up into the following body:—

55 clay
40 flint
5 whiting.

This mixture burned to a very porous body, of pale cream colour, at cone 04. It requires a higher fire, and the addition of so much flint is not necessary.

Both clays made excellent wheel bodies, and are glazed without difficulty. Glazed samples were sent to the museum at Regina, and also to the office of the Bureau of Labour and Industry.

Ontario.

Ordinary brick clays occurring at Kingston, Arnprior, Cobden, and Renfrew, were tested; but they were short grained, and had poor working qualities. Bowls were thrown on the wheel from these clays, but they developed cracks on drying, and had to be discarded.

Toronto.—The interglacial clay used by the Don Valley Brick Company for making red stock brick was tried out on the wheel, and its working qualities were found to be fairly good. The pieces had good drying qualities, and low shrinkage.

Burned at cone 05, the body was porous, and of light red colour. Very good results were obtained on this clay with the use of coloured tin enamels. The clay also made a good casting body.

A large deposit of similar clay occurs at Greenwood avenue, north of Gerrard street, where several brickyards are in operation. The clay was used on the wheel just as it came from the bank; but it was washed for the casting slip.

Hamilton.—A fairly plastic, coarse grained clay, occurring at Waterdown, is used for making sewer pipe. As it is rather gritty it is better to wash and screen it through a 60 mesh screen before using for a pottery body. The working and drying qualities of the washed clay were good. It is easily overfired, and at cone 05, the body is dense, and of dark red colour. The glaze developed only a slight craze.

A rather calcareous glacial clay from Bartonville burns to a buff body at cone 05. Owing to the presence of pebbles and coarse grit, this clay must be washed and screened before using. The washed clay is excellent for throwing on the wheel, also for modelling. Good effects were obtained on this clay with the use of coloured enamels; but as the body is porous, like all clays with a high lime content, the glazing must be applied thickly.

Up to the present time, no china-clay or stoneware clays have been found in southern Ontario; but attractive pottery could be made from the low fire, red burning clays which occur in many parts of the province. Mixtures of the buff and red burning brick clays could also be used to advantage in some cases. Nearly all these clays, however, should be washed and screened for use in pottery making, or for instruction in the manual arts in schools.

Quebec.

St. Rémi.—A yellow, plastic clay occurs at St. Rémi d'Amherst, where it is mixed with the white china-clay. This clay makes a good casting slip, and works well on the wheel, but the burned body is very porous, and the glazed ware is badly crazed. A mixture of red stoneware clay from Nova Scotia and the St. Rémi clay, in the proportions of red clay 20, flint 20, and yellow St. Rémi 60, gave much better results. In order to obtain a proper density, this body should be burned to a much higher temperature than that to which the trial pieces were subjected.

Buckingham.—A common, red burning, brick clay was tried out on the wheel. This clay had only average working qualities, with low shrinkage, and good drying property. A wheel piece was fired at cone 05, and glazed with a green, tin enamel. The glazed piece is a splendid example of the good results that may be obtained from some of the ordinary red burning clays.

Nova Scotia.

Avonport.—A red brick clay occurring at Shaw's brickyard at Avonport, makes a good wheel clay. At cone 06, it burns to a hard, red coloured body. It was used just as it came from the bank without any preparation except grinding. It can also be used for making cast or built ware. The glaze effects obtained on this clay were excellent.

Similar clay occurs at Middleton, Bridgetown, and Annapolis.

Albert Mines.—This is a highly plastic clay, which occurs in the swamp near the railroad track. It makes a good wheel clay. It dries slowly, and has a high shrinkage. The glaze on this ware has a tendency to bubble, and the clay should have a small amount of barium carbonate (·05 per cent) added before using. It burns to a fine red colour, at cone 06, and excellent effects were obtained by coating with transparent glazes or opaque enamels.

Stoneware clays occur in Nova Scotia at Middle Musquodoboit and Shubenacadie. The clay from Middle Musquodoboit is mined and shipped to St. John, N.B. by Messrs. Foley Bros., where it is manufactured into stoneware domestic pottery. This clay is

also mined and sold by the company, and is the only Canadian clay of this type on the market.

Shubenacadie.—Both sandy and plastic clays occur at Shubenacadie, which are shipped to Sydney Mines for the manufacture of fire brick. The plastic clay makes an excellent body for pottery, either made on the wheel, cast, or built. It is the best clay for this purpose in the province.

Musquodoboit.—The Musquodoboit clay is very plastic and smooth, and works well on the wheel, and for casting. The body, however, is difficult to glaze, the glaze having a strong tendency to craze.

Three series of 21 trials were made and fired with the following results. The pink clay was obtained from the Foley pit and the red clay from Norman Deals property.[1]

	Red clay.	Pink clay.	
	Cone 02, raw transparent glaze.	Cone 02, tin enamel.	Cone 04, raw transparent glaze.
50 clay, 50 feldspar	crazed	crazed	crazed.
50 clay, 40 feldspar, 10 flint	slight craze	crazed	crazed.
60 clay, 40 feldspar, 50 clay	crazed	crazed	crazed.
30 feldspar, 20 flint, 60 clay	good	crazed	crazed.
30 feldspar, 10 flint, 70 clay	good	crazed	crazed.
30 feldspar, 50 clay	good	crazed	crazed.
20 feldspar, 30 flint, 60 clay	good	good	crazed.
20 feldspar, 20 flint, 70 clay	good	good	crazed.
20 feldspar, 10 flint, 80 clay	good	crazed	crazed.
20 feldspar, 50 clay	slight craze	crazed	crazed.
10 feldspar, 40 flint, 60 clay	good	good	crazed.
10 feldspar, 30 flint, 70 clay	good	good	crazed.
10 feldspar, 20 flint, 80 clay	good	crazed	crazed.
10 feldspar, 10 flint, 90 clay	good	crazed	crazed.
10 feldspar, 50 clay	crazed	crazed	crazed.
50 flint, 60 clay	good	good	crazed.
40 flint, 70 clay	good	good	crazed.
30 flint, 80 clay	good	good	crazed.
20 flint, 90 clay	good	good	crazed.
10 flint, 100 clay	slightly crazed	crazed	crazed.
	crazed	crazed	crazed.

[1] "The Clay and Shale Deposits of Nova Scotia and Portions of New Brunswick," Geological Survey Branch, Department of Mines, Canada, by H. Ries and J. Keele, Memoir No. 16-E, pp. 73-83.

The clay from Middle Musquodoboit was used in 1919 and 1920 in the public schools of Ottawa, for instruction in the sixth grade manual arts work. It was found to be an excellent clay for this purpose, and a splendid exhibit of pupils' work in pottery is the result.

Prince Edward Island.

A red clay, occurring at Richmond, Prince Edward Island, is exceptionally smooth and plastic, and makes an excellent clay for built ware. It also works well on the wheel, and for casting. It has good drying and firing qualities. At cone 06, it has a hard, dense body of beautiful red colour, which does not require glazing. The ware, however, takes a good glaze, and an artistic ware is obtained by using coloured transparent glazes. This clay is well adapted for school work, and is in fact one of the best red burning clays so far found in Canada.

ROAD MATERIALS DIVISION.

K. A. Clark, *Chief of Division.*

The investigational work on road materials during the year has been a continuation of examinations already commenced. Some time was spent in Manitoba, rounding out what was done in that Province the previous year. The balance of the season was given to an examination of materials along some of the roads in Rocky Mountains Park, Alta. This more detailed work followed naturally after the general survey, in 1918, of conditions throughout the mountainous country in Alberta and British Columbia.

Road material surveys in Ontario were continued. Mr. Picher finished another stretch of the Toronto-Montreal route; and Mr. Gauthier carried on a miscellaneous programme of surveying and sampling. A summary report of their work appears as part of the following general report of the Division.

I.

ROAD MATERIALS AND SOIL CONDITIONS IN THE AREA BETWEEN WINNIPEG AND BRANDON, MAN.

Materials and soil conditions encountered along the highway between Winnipeg and Brandon were examined in 1918. This year, time enough was spent in extending the survey over an area approximately six townships wide, from north to south; with the Winnipeg-Brandon route cutting through the centre of the area. The 1918 work indicated that the main problem facing the Road Materials Division in undertaking investigations in areas such as this one, was an adequate examination and study of the soil conditions in their relation to road building, so as to lend some light on the question of how a serviceable rural road can be provided under the various typical soil conditions that occur. The soil changes have consequently been blocked out in a very general way. These soil areas, as well as occurrences of gravel, are presented in a graphic way by means of the accompanying sketch map.

The area in question forms a cross section across the bed of the ancient Lake Agassiz.[1] The highest western shore of Lake Agassiz is at Brandon, extending southeast to the Tiger hills, and northeast to the Riding mountains. The Assiniboine river entered the lake at the present site of Brandon, and threw out in front of its mouth a huge delta accumulation, extending east to the neighbourhood of Portage la Prairie, and northeast to near Gladstone. The soil of the country to the west of this highest shore line is the direct product of the glacial till deposited in glacial times. The soil to the east, however, has suffered all degrees of modification, due to factors introduced by the ancient lake and by the Assiniboine river.

The Assiniboine river, emptying into Lake Agassiz, deposited an accumulation of coarse material in the form of gravel in the neighbourhood of the present site of Brandon; then fine material was spread out over a wide area. From Brandon, eastward, to near Austin, southeastward along the Assiniboine river almost to Portage and northeast to the line of the beach line running through Edrans and Arden, this

[1] Glacial lake, Agassiz, W. Upham, Geological Survey of Canada, 1890.

delta country is hilly, consisting of a fine silty soil and sand. The waste sand areas and dunes seem to be due to a certain extent at least, to the re-sorting and distribution of the silt and sand constituents in the delta deposit by wind action. Proceeding eastward, the hilly country gives place to the plain in which the soil continues light and sandy, but gradually shading off into the clay land of the Portage plains.

Lake Agassiz, in its retreat, left many beach lines behind it. Upham spent much time in locating and tracing them out. A few of them can be seen in the area now being considered. Since, when well developed, they contain gravel or sand, the beaches are of significance from the road material standpoint. They appear as a slight swell on the flat landscape, somewhat like a railway grade winding away in the distance. Two such beaches occur in the delta area. One, named by Upham the Norcross beach, runs north from Neepawa. Another runs along the edge of the hilly country south from Arden, through Edrans, crossing the Canadian Pacific railway between Sidney and Austin, and losing itself in the hills to the south. Still another beach, called the Burnside beach, runs from northwest to southeast, both north and south of the Assiniboine river, and a short distance west of Portage. This beach line has been made the dividing line between the delta area and the clay area to the east. The Kinosota ridge is a continuation of the Burnside beach. The connexion cannot be followed through the intervening swampy area.

East of the delta area is a stretch of country in which the clay constituent of the soil predominates. This clay constituent is apparently the gumbo clay of the Red River valley. In the Portage plains, and eastward north of the Assiniboine toward Stonewall, the soil has a high silt and sand content. Boulders occur scattered about also. The soil may be a modified glacial till. But in any case, the clay constituent is there, and imposes its characteristics all through this area. Along the north bank of the Assiniboine and in the country to the south, the land gets more and more clayey as the Red river is approached, and becomes the real "gumbo" country. The clay extends east of the Red river for about twenty-five miles, becoming more sandy, however, until the flat clay prairie is left, and light soil conditions commence.

A tongue of country extends from the light area east of Winnipeg, southwestward along the Red river, and toward the city. This area is decidedly sandy, and ends in a series of eskers which give the deposits of gravel such as that at Bird's hill.

A fragmentary beach line—called the Ossowa beach by Upham—occurs running northeast from a short distance north of Poplar point, and skirts the southern limit of a rough, stony, little settled region.

Two small gravel deposits[1] occur in the clay land north of the Assiniboine river, one north of the post office of St. François Xavier, the other northwest of Pigeon lake.

The only occurrences of bed-rock are at Stonewall and Stony Mountain. A soft magnesian limestone is quarried at these points. Similar limestone also occurs in the neighbourhood of Garson on the eastern limit of the area examined.

The accompanying map shows the soil areas and the occurrences of material mentioned. The limits set for the soil areas are not exact since no exact limits exist. The soil types grade into each other.

CHARACTERISTICS AND PHYSICAL PROPERTIES OF THE SOIL TYPES.

Glacial till west of Brandon and the upper shoreline of Lake Agassiz.—The soil of this area has everywhere a fairly high sand content. The clay and silt constituents vary from twenty to sixty per cent. Dry road surfaces through the area are hard. When the clay content is high the surfaces have considerable strength, and are not easily broken into loose material. None of the soil, however, has any particular stability when wet, and the clayey phases become sticky and adhere to wheels rather badly.

[1] Upham assigns a glacial origin to these deposits, similar to the eskers northeast of Winnipeg.

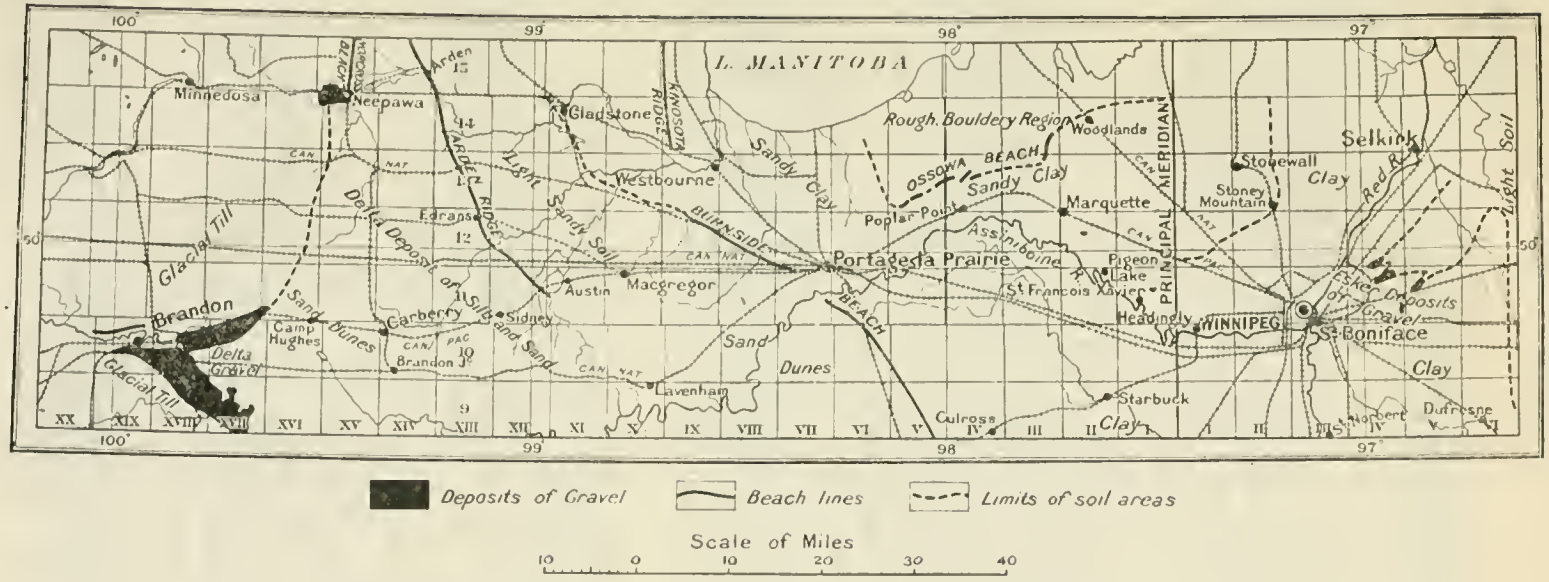

Fig. 2. Sketch map, Winnipeg to Brandon, Manitoba; showing approximate limits of the typical soils of the area and location of deposits and beach-lines which contain gravel.

[1]Silt and clay, 20 to 60 per cent.
Compressive strength, dry, 400 to 1,000.
Bearing strength, wet, 5 to 10.

Assiniboine delta soils.—The material thrown out by the Assiniboine river into its delta would seem to be a fine, silty aggregate with a low sand content. This material is seen laid down in strata all through the area especially in cuts and excavations. It is often covered by varying thicknesses of modified material, sandy in nature. Parts of the delta area are quite barren because of the accumulation of sand, devoid of fine material, heaped into dunes.

The silty soil makes good tillable land. Road surfaces composed of it are hard and durable when dry, but unstable when wet, and very sticky.

Sand, 0 to 25 per cent.
Compressive strength, dry, 1,500 to 2,000.
Bearing strength, wet, 10 to 15.

The sandy phases of the delta soil vary from quite fine material, containing a fairly high per cent of clay and silt, and which is cultivated to the loose, drifting sand among the dunes. Roads through this type of soil are loose and heavy when dry. When wet, they have more stability than the silty soils, and are not sticky.

Clay and silt, 0 to 50 per cent.
Compressive strength, dry, 0 to 500.
Bearing strength, wet, 15 to 30.

Soil of the Portage Plains and eastward toward Stonewall.—Clay becomes the predominating constituent in this area, and although much of the soil has quite a high percentage of sand, the sticky, plastic clay is present in sufficient quantity to impose its characteristics upon the soil. Roads through this area are for the most part hard and serviceable when dry, but unstable and very sticky when wet, adhering badly to wheels.

Sand, 25 to 50 per cent.
Compressive strength, dry, 1,000 to 1,500.
Bearing strength, wet, 5 to 15.

Clay area of the Red River Valley.—As the Red river is approached, the soil becomes very clayey, with less and less admixture of sand, until this constituent becomes insignificant. Roads through this area are very hard when dry, with large shrinkage cracks. When wet, the road surface swells and gets soft and very sticky. This type of road is nearly impassable when wet.

Compressive strength, dry, 1,500 to 2,000+.
Bearing strength, wet, 15 to 20.

The Assiniboine river through the clay area has deposited in its banks a soil which is silty and apparently light in nature. This type of material appears in places on the surface of roads following the river. It has a considerable clay content, however, and while it does not get hard as when dry, is, when wet, very nearly as unstable and sticky as the clay.

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[1] The tests applied to soils were described in the Summary for 1918, page 173. Compressive strength figures are obtained by making compression tests on dried cylinders of the soil moulded while damp under a pressure of 132 kilos per square centimetre. The bearing strength is the weight necessary to cause a right angled V-shaped blade, two-tenths of an inch thick, to penetrate the soil to a depth of one inch when the soil is in the condition that it is on a road surface after a soaking rain. The values given for these tests have only comparative significance.

Light soil to the East of Winnipeg.—The clay soil east of the Red river becomes more sandy until at about twenty-five miles it is decidedly light. Road surfaces in this area are quite stable when dry, and when wet still show considerable stability, and are not sticky.

Clay and silt, 25 to 60 per cent.
Compressive strength, dry, 400 to 600.
Bearing strength, wet, 30 to 60.

Work is being continued with a view to determining ways and means of obtaining stable aggregates, with minimum modification of the various soil types that have been noted.

CHARACTERISTICS OF THE GRAVELS OCCURRING IN THE BEACH AND ESKER DEPOSITS THROUGHOUT THE AREA.

The gravels throughout the area are everywhere very similar in composition. Approximately, 75 per cent of the pebbles consist of magnesian limestone, the balance being granite and gneiss. The deposits in the neighbourhood of Brandon contain an appreciable percentage of shaly pebbles, which split into thin layers when exposed Practically, none of the gravels contain more than 5 per cent of very fine material passing the 100-mesh sieve. The percentage of the gravel larger in size than one-fourth of an inch, falls pretty uniformly within the limits of 25 to 35 per cent. Of this coarser material, three-fourths of it is less in size than three-fourths of an inch. The material in the esker deposits northeast of Winnipeg tends to be somewhat coarser than this, while gravel from the two small deposits north of the Assiniboine river in the municipality of St. Francois Xavier; in the Ossowa beach-line; and in the Norcross beach-line; are finer Material in the Burnside beach and the Kinosota ridge can hardly be called gravel. It is better described as a sand with particles seldom larger in diameter than one-fourth of an inch.

II.

ROAD MATERIALS IN ROCKY MOUNTAINS PARK, ALTA.

About six weeks of the field season of 1919 were spent in Rocky Mountains park: extending—in a more detailed way—the start made in 1918. Materials along the auto routes in the western part of the park were examined and sampled, and the various conditions affecting the road building problem noted.

An auto road runs up the Bow valley from Banff, keeping to the right-hand side of the river. A heavy tourist auto traffic passes over this road for about 16 miles to Johnston's creek. About 3½ miles farther up the valley from Johnston's creek the road forks. One branch continues to follow the right-hand side of the Bow river for 6½ miles farther. The road grade then ends, but construction work is proceeding, which will extend it as far as Laggan and Lake Louise. The other branch crosses the Bow river, ascends the left-hand side of the Bow valley to the Vermilion pass, and proceeds into British Columbia. This road will, in the near future, be constructed through to the Columbia valley. It will then be possible to motor from the prairie country at Calgary, to Banff; to Windermere, B.C.; in the Columbia valley, to Lethbridge, and back to the plains. With the completion of this road grade, it is no exaggeration to say that one of the most magnificent scenic routes to be found anywhere in the world will have been made accessible to the motoring tourist. The charms of this wonderful belt-line trip up through the tips of the Rockies cannot fail to attract a great stream of tourist traffic, if anything like an adequate road grade and surface can be provided.

TABLE I.

Results of Tests on Gravel Samples, Rocky Mountains Park, Alta.

Location.	Character of Gravel.				Mechanical Analysis.											
	[1]Composition of Pebbles. Per cent of.		Proportion of Gravel to sand. Per cent of.		Gravel. Per cent retained on screens.					Sand. Per cent retained on sieves.						
	Intermediate.	Soft.	Gravel.	Sand.	1½"	1"	¾"	½"	¼"	8	14	28	48	100	200	Passing 200
Gravel from flat 18·8 miles west of gate	95	5	60	40	56	8	9	11	16	20	9	11	18	19	10	13
Gravel pit at Road Forks	90	10	55	45	29	9	13	22	27	24	15	19	22	12	4	4
Gravel pit 0·3 mile west of Road Forks	60	40	60	40	24	9	13	23	31	29	22	20	12	5	3	7
	.....	.....	55	45	22	8	12	21	37	22	21	22	14	7	4	10
Gravel pit in cut 0·7 mile west of Forks.	95	5	60	40	53	13	8	10	16	23	10	13	26	20	4	4
	95	5	70	30	45	18	12	16	19	18	12	16	26	17	5	6
Gravel pit 1·2 miles west of Forks	95	5	60	40	34	12	12	18	24	26	20	20	15	7	4	8
	.....	.....	.....	.....	.....	.....	.....	.....	.....	27	19	19	17	8	3	7
Gravel pit 2·4 miles west of Forks	80	20	45	55	39	7	10	14	30	20	12	12	13	12	9	22
	.....	.....	45	55	38	8	10	14	30	25	13	11	11	10	8	22
Gravel pit 3·8 miles west of Forks	95	5	60	40	23	9	13	28	27	22	10	13	20	17	7	11
	95	5	40	60	15	10	10	27	38	18	11	17	21	15	7	11
Gravel pit 4·3 miles west of Forks	95	5	35	65	33	13	10	21	23	20	17	22	25	8	2	6
	95	5	30	70	18	11	13	21	37	15	18	29	25	6	2	5
	.....	.....	40	60	18	10	10	22	40	10	13	27	31	11	3	5
Gravel exposed in a cut on top of boulder clay hill 6·3 miles west of Forks	75	25	50	50	38	9	9	15	29	19	15	18	19	13	7	9
	.....	.....	50	50	25	11	11	19	34	23	18	19	16	10	5	9
Gravel exposed in cut B.C. Road 1·2 mile from Fork	75	25	60	40	32	8	11	21	28	28	20	20	15	6	3	8
Gravel exposed in cut 9·7 miles from Fork, B.C. Road	53	37	55	45	25	24	14	16	22	22	16	24	16	3	2	17
Gravel, B.C. Road 10·9 miles from Fork	80	20	45	55	15	21	16	22	26	25	15	15	15	10	6	14
Gravel from beside river bank, B.C. Road 13·5 miles from Fork	80	20	50	50	50	10	12	16	12	7	7	12	32	21	7	14

[1]The composition of pebbles from a deposit is determined by inspection of about a hundred representative pebbles. They are classed as durable, intermediate, or soft, according as they are composed of rock which would show a per cent of wear of less than 3, between 3 and 6, or more than 6, respectively. These three classes mean, practically, pebbles composed of fresh rock of igneous origin, fresh limestone, and weathered pebbles of both types.

TABLE II.

Results of Tests on Boulder Clay Samples, Rocky Mountains Park, Alta.

Location.	Character of Gravel.				Mechanical Analysis.											
	[1]Composition of Pebbles. Per cent of.		Proportion of Gravel to sand. Per cent of.		Gravel. Per cent retained on screens.					Sand. Per cent retained on sieves.						
	Intermediate.	Soft.	Gravel.	Sand.	1½″	1″	¾″	½″	¼″	8	14	28	48	100	200	Passing 200
0·5 mile west of railway crossing gate	90	10	45	55	10	15	16	28	31	24	9	6	8	17	9	27
0·9 mile west of gate	95	5	20	80	11	16	18	22	33	6	5	5	8	10	11	55
1·5 mile west of gate.	90	10	55	45	30	17	13	15	25	14	12	13	13	16	13	19
1·7 mile west of gate.	.....	.....	.....	100	....	....	....	....	....	1	1	1	1	1	10	85
2·5 mile west of gate.	80	20	70	30	28	18	14	16	24	22	12	8	7	8	10	33
	.....	.....	65	35	52	11	10	14	13	27	7	6	7	10	12	31
17·0 miles west of gate	.....	.....	.....	.....	....	....	....	....	....	9	6	6	9	14	13	43
1·4 mile W. of Forks.	75	25	20	80	....	27	17	29	27	8	5	6	8	11	11	51
	.....	.....	15	85	....	40	8	21	31	9	6	6	8	10	9	52
4·9 miles W. of Forks.	60	40	30	70	32	17	12	18	21	14	10	11	13	13	10	29
5·8 miles W. of Forks.	65	35	35	65	44	6	8	17	25	7	5	6	10	9	9	54
6·7 miles W. of Forks.	65	35	20	80	31	23	11	15	20	4	3	4	5	7	6	71
B. C. Road 3·8 miles from Forks	75	25	35	65	23	19	12	20	26	14	8	9	11	13	14	31
B. C. Road 5·8 miles from Forks	65	35	35	65	40	23	6	14	17	15	10	12	17	16	10	20
B. C. Road 7·0 miles from Forks	80	20	45	55	15	13	17	23	32	39	18	12	8	5	4	14
B. C. Road 8·1 miles from Forks	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....
B. C. Road 8·1 miles from Forks	75	25	40	60	24	12	16	20	28	22	15	12	11	10	8	22
B C. Road 12·7 miles from Forks	70	30	55	45	34	15	8	20	23	39	18	9	5	3	3	23
B. C. Road 13·9 miles from Forks	85	15	55	45	52	13	9	11	15	24	12	8	5	5	7	39
B. C. Road 14·9 miles from Forks	70	30	65	35	12	32	24	19	13	22	13	14	15	9	5	22

[1]See footnote on previous page.

TABLE III.

Results of Tests on Samples of Gravel, Rocky Mountains Park, Alta.

Location.	Character of Gravel.				Mechanical Analysis.											
	Composition of Pebbles. Per cent of.		Proportion of Gravel to sand. Per cent of.		Gravel. Per cent retained on screens.					Sand. Per cent retained on sieves.						
	Intermediate.	Soft.	Gravel.	Sand.	1½"	1"	¾"	½"	¼"	8	14	28	48	100	200	passing 200
Gravel pit 1·3 mile west of railway crossing gate	85	15	45	55	25	10	10	20	35	31	12	11	12	13	8	13
	.....	.....	50	50	9	9	13	30	39	31	17	13	9	7	5	18
	.....	.....	65	35	20	12	13	25	30	42	14	9	7	7	6	15
Rough rock fragment deposit, 6 miles west of gate	90	10	60	40	19	6	22	14	39	47	8	3	2	4	10	26
	.....	.....	60	40	17	13	16	21	33	38	10	6	4	5	10	27
Deposit of angular material cemented hard with silt. 6·9 miles west of gate	70	30	60	40	39	8	11	16	26	24	13	12	11	11	8	21
	.....	.....	50	50	21	8	10	25	36	23	13	11	12	10	9	22
	.....	.....	55	45	22	8	12	26	32	19	12	10	10	12	10	27
Gravel exposed in ditch. Same deposit as 7·4 miles W. of gate	65	35	60	40	21	11	12	22	34	4	13	6	4	6	10	17
Gravel in small pit 7·5 miles W. of gate	80	20	65	35	29	8	12	20	31	37	13	9	6	7	9	19
	95	5	75	25	42	10	12	17	19	36	10	6	5	8	13	22
	95	5	55	45	23	7	15	24	31	33	9	5	5	9	14	25
Pit in deposit of angular material cemented hard by silt, 8·8 miles west of gate	95	5	60	40	36	9	11	19	25	28	10	6	6	7	8	35
Pit of gravel with streaks of sand. 9·3 miles west of gate	95	5	70	30	36	9	13	19	23	36	12	8	6	7	9	22
	95	5	70	30	37	10	12	18	23	0	1	3	8	11	16	61
	.....	.....	70	30	38	7	9	22	24	30	11	9	11	14	10	15
Gravel from below silty top soil, 9·4 miles west of gate	75	25	65	35	31	13	17	19	20	31	8	6	8	12	11	24
Gravel pit, 10 miles west of gate	75	25	70	30	51	10	10	14	15	26	12	10	8	10	12	22
	.....	.....	65	35	38	13	13	18	18	28	13	10	7	8	9	25
	90	10	75	25	38	10	12	19	21	30	11	8	9	13	12	17
Gravel pit. Angular pebbles. 10·9 miles west of gate	95	5	65	35	38	11	13	19	19	35	13	8	7	10	10	17
	65	35	55	45	28	10	12	22	28	27	12	8	8	12	13	20
	.....	.....	60	40	25	10	15	25	25	28	12	11	12	12	9	16
Test pit of gravel in flat 12·0 miles from gate	95	5	70	30	27	12	12	24	25	37	8	6	9	11	11	18
Test pit in flat 12·4 miles W. of gate	90	10	65	35	25	11	16	23	25	33	14	11	10	12	9	11
Test pit in flat 12·5 miles W. of gate	85	15	35	65	4	4	11	32	49	35	12	8	8	16	10	11
Gravel underlying flat 14·8 miles W. of gate	70	30	60	40	48	8	10	15	19	20	14	15	15	12	11	13
Gravel underlyiag flat 15·0 miles W. of gate	65	35	55	45	29	12	12	21	26	28	17	18	18	8	4	7
Gravel underlying flat 15·2 miles W. of gate	70	30	55	45	25	10	14	23	28	33	17	10	11	11	6	12

TABLE III.—*Concluded.*

Results of Tests on Samples of Gravel, Rocky Mountains Park, Alta.—*Concluded.*

Location.	Character of Gravel.				Mechanical Analysis.											
	Composition of Pebbles. Per cent of.		Proportion of Gravel to sand. Per cent of.		Gravel. Per cent retained on screens.					Sand. Per cent retained on sieves.						
	Intermediate.	Soft.	Gravel.	Sand.	1½″	1″	¾″	½″	¼″	8	14	28	48	100	200	Passing 200
Gravel from pit at Johnson creek, 15·5 miles W. of gate	.....	.....	35	65	....	6	15	29	50	3	5	12	30	29	9	12
	70	30	55	45	25	10	14	23	28	13	12	25	27	14	4	5
	95	5	60	40	31	9	13	22	25	19	11	16	25	19	5	5
Gravel pit, 16·7 miles west of gate	95	5	65	35	34	11	13	20	22	31	9	6	13	20	6	15
	.....	.....	55	45	21	8	13	24	34	22	32	20	12	5	2	7
Gravel exposed in cut 17·2 miles west of gate	95	5	50	50	6	5	9	25	55	35	9	12	26	11	2	5
	95	5	75	25	35	9	12	22	22	30	13	11	16	8	4	18
	.....	.....	60	40	26	10	13	26	25	27	15	15	17	12	5	9
	.....	.....	70	30	35	10	13	19	23	34	15	10	15	9	4	13
Gravel pit 18·2 miles west of gate	95	5	85	15	41	18	15	19	7	13	4	3	6	18	25	31
	.....	.....	90	10	60	15	10	10	5	37	10	6	9	12	9	17

TABLE IV.

Results of Tests on Gravel Samples taken from Gravel Road Surfaces, Rocky Mountains Park, Alta., and Manitoba.

Location.	Character of Gravel.				Mechanical Analysis.											
	Composition of Pebbles. Per cent of.		Proportion of Gravel to sand. Per cent of.		Gravel. Per cent retained on screens.					Sand. Per cent retained on sieves.						
	Intermediate.	Soft.	Gravel.	Sand.	1½"	1"	¾"	½"	¼"	8	14	28	48	100	200	Passing 200
0·5 mile W. of gate...	80	20	40	60	4	21	13	23	39	19	12	9	9	10	10	31
9·4 miles west of railway crossing gate...	80	20	65	35	30	19	12	16	23	15	13	11	9	10	11	31
12·5 miles west of gate	85	15	55	45	14	19	12	22	33	14	8	7	10	13	15	33
0·2 mile west of Forks.....	70	30	30	70	3	20	16	23	38	24	14	13	10	7	5	27
2·5 miles west of Forks.....	.....	.....	60	40	29	13	10	19	29	22	12	12	12	11	8	23
2·8 miles west of Forks.....	65	35	65	35	....	10	10	29	51	37	17	12	10	11	5	8
4·4 miles west of Forks.....	.....	.....	35	65	26	7	13	23	31	18	18	22	22	8	3	9
From East Kildonan Rd., Winnipeg, Maa. Gravel over gumbo soil.....	85	15	35	65	....	20	16	30	34	15	14	14	13	11	5	28
From road toward Birds Hill, Maa. Gravel over gumbo soil	.....	.....	30	70	....	13	17	23	47	14	12	14	15	11	7	27
From gravel road over clay soil near Winnipeg, Man.....	.....	.....	25	75	11	23	15	19	32	12	9	17	22	12	4	24
From gravel road over clay soil near Winnipeg, Maa.....	.....	.....	25	75	27	12	8	18	35	12	11	16	22	12	5	22
From sand-clay road in clay country near St. Francois Xavier, Man.....	.....	.....	5	95	0	15	6	23	56	7	11	20	18	11	6	27
From gravel road in till soil south of Brandon, Man.....	.....	.....	35	65	8	28	12	21	31	11	10	17	17	13	9	23
From gravel road over sandy silty soil between Neepawa and Ardea, Maa.....	.....	.....	25	75	12	7	10	27	44	23	8	6	10	15	9	29

TABLE V.

Summary of the Results of Mechanical Analyses given in the Preceding Tables, of Gravel Samples, Boulder Clay Samples and Samples from Surfaces of Gravel Roads.

(Limits of per cents are chosen so as to include the large majority of individual values).

Location.	Per cent of Gravel in total aggregate.	Gravel. Per cent retained on screens.					Sand. Per cent retained on sieves.						
		1½"	1"	¾"	½"	¼"	8	14	28	48	100	200	Passing 200
I Gravel from Rocky Mountains Park	50 to 75	20 to 35	8 to 12	12 to 17	15 to 25	25 to 35	25 to 35	8 to 12	8 to 12	8 to 12	8 to 12	8 to 12	20 to 30
	50 to 75	25 to 35	8 to 12	10 to 18	20 to 25	20 to 30	25 to 35	10 to 15	10 to 15	10 to 20	10 to 15	5 to 10	10 to 20
	40 to 60	20 to 35	8 to 12	8 to 12	17 to 22	20 to 30	20 to 25	12 to 18	15 to 25	15 to 25	5 to 15	0 to 10	5 to 20
II Boulder clay from Rocky Mountains Park	20 to 60	15 to 40	15 to 25	10 to 20	15 to 25	20 to 30	10 to 25	5 to 15	5 to 15	7 to 15	5 to 20	5 to 15	25 to 50
III Gravel from gravel road surfaces, Rocky Mountains Park	35 to 60	10 to 30	10 to 20	10 to 15	20 to 30	30 to 40	15 to 25	10 to 20	10 to 15	10 to 15	10 to 15	5 to 10	25 to 35 (Compacted).
												10	(loose).
IV Gravel from gravel road surfaces from Manitoba	25 to 35	0 to 25	10 to 25	10 to 15	20 to 25	30 to 45	10 to 15	10 to 12	14 to 17	15 to 20	10 to 15	5 to 10	25 to 30

Gravel occurrences and boulder clay deposits were noted and sampled along the roads just mentioned, as far as one could reach by the use of a motor car. Samples were also taken, at a number of places, from surfaces of stretches of gravel road that were giving good service. The results of tests are recorded in the accompanying tables. The location of points of sampling are indicated by the distance in miles from the railway crossing west of Banff station, or from the road forks about 19 miles up the Bow valley. The distances were determined by means of the speedometer of the car used in the work: their reliability can be judged accordingly.

Materials for the building or surfacing of roads in mountainous country such as that of Banff, must, for the most part, be immediately accessible from the right of way. The road grade is generally established on sloping country, and is often literally excavated out of the mountain side. It is not then a question of going afield until a suitable type of material is found. Instead, the problem is to accomplish the result desired by the use of the material encountered in constructing the road, where it must be constructed to secure the proper grade. The roads naturally follow, as much as possible, the courses of the valleys. The valleys are filled with drift material, which is generally stony, and varies from gravel to stony, bouldery soils, or boulder clay. A mountain road nearly always cuts through shoulders of gravelly material at frequent intervals. But unfortunately, the material is seldom just what it ought to be, to provide a source of really suitable surfacing gravel. It will be too coarse or unevenly graded, deficient in fine material, or full of silt and clay.

The Rocky Mountains Park roads—as can be judged from the table of results of tests—run through plenteous material of a gravelly nature. Much of it has been used for road surfacing and with very fair results. The most difficult condition met on these roads is long stretches of road grade passing through boulder clay. This material contains a high proportion of stone, but it is not evenly graded as to size, and has an excessive percentage of silt and clay. This fine material makes the boulder clays hard when dry, but renders a road surface sticky, slippery, and unsafe, when wet, and puts it in a condition to be greatly damaged by traffic. Much of the road from the forks up through the Vermilion pass is situated in boulder clay, with practically no occurrences of good gravel.

While the boulder clays are too rough and clayey, and many of the gravel deposits are faulty in one way or another, it would seem that none of these materials are really far removed from being good aggregates. For the purpose of comparison and interpretation, the results contained in the tables of tests have been condensed in the preceding table, and expressed by limiting values. These limits are chosen to include in each case the large majority of the individual values. There are results for 60 samples of gravel. These have been bunched into three groups of twenty each, taking them in the order in which they are found in the table. There are about twenty results for samples of boulder clay. Then there are seven samples taken from gravel road surfaces in Rocky Mountains Park, and seven similar samples from Manitoba.

The limits for analysis of samples from gravel road surfaces can be taken as reference limits. The surfaces sampled were all well compacted, stable, and apparently giving good service. Two loose, uncompacted gravel surfaces were also sampled. Comparing the values for the gravels with each other, and with those for the samples from road surfaces, no very obvious differences are apparent. The most important difference is probably in connexion with the proportion present of material passing 200 mesh. This is the material that binds and makes the difference between a compacted and a loose surface. The gravels tend to have less binding material than is found in a compacted road surface. The two samples taken from surfaces which have failed to bind are low in material passing 200 mesh. All the compacted road surfaces examined contain from 25 to 35 per cent of material passing 200 mesh. It would appear that if such proportion of this constituent is not present in the original

gravel used in construction, the road bed will remain loose until the fine material is brought up to a sufficiently high value, either by abrasion of the pebbles or by introduction of clay and silt from the soil in the neighbourhood. Some of the gravels have a heavy percentage of large sized pebbles which make them rough for surfacing.

The boulder clays show wider limits of variation. The proportion of pebbles larger than one-fourth of an inch, to that of sand and clay, shows a wide range of variation. But the boulder clays obviously differ the most from serviceable surface aggregates in the high silt and clay content. Otherwise, they show great similarity to the gravels and the road surface aggregates.

Boulder clay is about the only material easily available for many stretches of road. It seems to be regarded as a rather hopeless case. But yet slight modification in composition would make much of the boulder clay coincide well with aggregates that are giving good service. Boulders of all sizes, and in quantities, occur in the boulder clay. If these boulders, in controlled amounts, were run through a crusher, together with the boulder clay itself, a product could be obtained in which the pebble and sand content would be increased, and consequently, the clay and silt percentage reduced to the proper extent.

There is great need of better methods of performing and recording mechanical analyses and of relating the results to the characteristics of the corresponding aggregates as displayed as a road material. Only in this way will it be possible to adequately examine gravel material, and thus determine just what modification, if any, is advisable to secure a serviceable aggregate. The Road Materials Division is working on this problem.

III.

ROAD MATERIAL INVESTIGATIONS IN CHATEAUGUAY AND BEAUHARNOIS COUNTIES, QUE., FROM MORRISBURG, ONT., ALONG THE ST. LAWRENCE RIVER TO THE QUEBEC BOUNDARY, AND IN THE NEIGHBOURHOOD OF RENFREW, ONT.

HENRI GAUTHIER.

A considerable proportion of the time of the writer, during the field season of 1919, was spent in road materials investigations, which, besides supplying information of use in highway construction planning, was also calculated to fit into the material surveys and studies being conducted by the Mines Branch under the direction of Mr. Keele in connexion with the St. Lawrence river power development. A complete road material survey of parts of the counties of Chateauguay and Beauharnois was made. The more important deposits of gravel occurring within reach of the St. Lawrence river from Morrisburg to the Quebec boundary were re-sampled for more complete laboratory study.

Dr. Morley E. Wilson, of the Geological Survey, Canada, has been engaged in geological mapping and studies of the country in the neighbourhood of Renfrew, Ont. Acting on his suggestion, and making use of the information he has secured, a programme of sampling for laboratory study of the various types of rock deposits and of gravel in this vicinity was undertaken. It was thus possible to quickly secure a considerable amount of useful information in a part of the country where important highway construction is being considered, and to supply to Dr. Wilson additional practical data for the report he is preparing.

Sampling of deposits of material encountered in the survey from Prescott to Kingston—conducted by the Division—was also a part of the field duties of the season.

Results of tests on samples collected and studied in the laboratory are presented in the following tables:—

TABLE I.

RESULTS OF TESTS ON BED-ROCK

Chateauguay and Beauharnois Counties, Que.

Locality.	Rock Type.	Physical Properties.					
		Wear.	French coef. of wear.	Toughness.	Hardness.	Specific gravity	Absorption in lb. per cu. ft.
		%					
Lapiene quarry, Bellerive	Beekmantown dolomite	1·86	21·6	24	18·1	2·74	1·04
Magloire Theoret quarry, Bellerive	" "	2·50	16·0	21	16·1	2·79	0·40
Alexis Dorais quarry, St. Timothée	" "	3·06	13·1	14	16·1	2·85	0·57
Arsene Meloche quarry, St. Louis de Gonzague	" "	2·58	15·5	25	17·8	2·76	0·62
Montpetit quarry, Beauharnois	Potsdam sandstone	2·34	17·1	6	17·3	2·65	0·74
Alphonse Faubert's farm, Bellerive Station, Ville de Lery	Beekmantown dolomite.	2·30	17·4	23	18·0	2·74	0·32
Laberge quarry, Chateauguay	" "	2·38	16·8	15	18·2	2·77	0·38

Renfrew District, Ont.

Jamieson quarry, Renfrew	Crystalline limestone	4·42	9·1	4	11·6	2·77	0·19
At water tower, immediately south of Renfrew	Basic granite-gneiss	2·3	17·4	17	17·4	2·80	0·29
Two miles southwest of Renfrew	Acidic granite-gneiss	1·94	20·6	16	18·5	2·70	0·44
Pinnacle quarry, 1½ miles northwest of Renfrew	Hornblende-schist	1·93	20·7	17	17·0	3·04	0·41
7 miles northwest of Renfrew	Diabase	2·2	18·1	21	18·4	3·03	0·37
Municipal quarry, 1½ miles northeast of Renfrew	Crystalline limestone	5·16	7·8	4	13·4	2·79	0·26
5 miles north of Renfrew	Gabbro	3·39	11·8	11	18·3	3·10	0·66

TABLE II.

Character of Deposits of Field Stone.

Location.	Average of whole Deposit.					Remarks.
	Dolomite.	Igneous.	Sandstone.	Stone over 1 ft. diameter.	Total yardage.	
	%	%	%	%		
De Salaberry island along north shore road	45	15	40	35	800	Dolomite is weathered on the surface but fairly fresh inside. Sandstone is soft and a poor road material.
Northeast end of De Salaberry island	50	10	40	50	1,000	Igneous is largely composed of gneisses.
Stock piles along road north of Bellerive	60	10	30	0	100	About 50 per cent of the sandstone is very soft. The dolomite is fairly fresh.
	45	5	50	0	125	
Parish of St. Timothée south of village	65	5	30	33	1,500	Dolomite is fine grained, bluish grey, somewhat weathered to brownish colour on the surface. It has been used with success in macadamizing work. Both the soft friable and the tough quartzitic varieties of the sandstone occur in about equal amount. The latter can be used with advantage in foundation work.
Parish of St. Timothée, Con. I and II, west of station road	70	5	25	33	1800	
Parish of St. Timothée, Con. II, east of station road	65	5	30	30	2,500	
Parish of St. Timothée, Con. II and I	20	0	80	50	2,000	
Parish of Ste. Madeline, Con. II and III, from N.Y. Central R. line to G.T.R. line	55	5	40	20	5,000	Dolomite partly fresh, partly weathered. Sandstone is soft.
Con. IV—4 miles south of Valleyfield	60	0	40	10	900	
Parish of St. Louis de Gonzague, west of village, Con. VI and VII	60	5	35	15	8,900	
South of village of St. Stanislas de Kostka	75	5	20	20	1,500	
Con. IV and V, 3 miles southeast of St. Stanislas	85	5	10	20	2,500	
1½ miles west of village of Beauharnois	5	5	90	25	1,500	
Along lake shore from 2 miles east of Beauharnois to Woodlands in Chateauguay county	80 to 100	0 to 5	0 to 20	20	.....	The amount of field boulders estimated, on account of the built-up character of the area where they occur, not less than 20 cubic yards.

TABLE III.

RESULTS OF TESTS OF GRAVEL SAMPLES.

Along St. Lawrence River, from Morrisburg, Ont., to Quebec Boundary.

Sample No.	Owner and Location of Deposit.	Character of Gravel.					Mechanical Analysis.													Remarks.
		Composition of pebbles (1).			Proportion of gravel to sand.		Gravel. Per cent retained on screens.							Sand. Per cent retained on sieves.						
		Durable.	Intermediate.	Soft.	Gravel.	Sand.	2½"	2"	1½"	1"	¾"	½"	¼"	8	14	28	48	100	200	Passing 200	
			%		%	%															
1	A. Cougler, Lot 35, Con. III	.....	100	.....	72	28	5	18	19	20	8	14	16	28	20	22	17	7	2	4	Rather fresh limestone pebbles.
2	Williamsburg tp	.....	100	.....	73	27	10	14	19	15	10	13	19	28	20	21	17	8	2	4	Samples were taken 10 feet apart and at different level.
3	Two miles south of Grantley	.....	95	5	50	50	8	12	10	20	13	16	21	17	15	27	30	9	1	1	Flaggy pebbles dense to fine grained est.
4	Lot 5, Con. VI	.....	90	10	76	24	30	10	7	16	8	13	16	37	20	17	15	6	2	3	
5	Williamsburg tp	.....	95	5	69	31	4	10	18	20	12	15	21	47	27	17	6	1	1	1	
6	W. N. Hollister pit, Lot 27, Con. IV, Osnabruck tp	.....	100	.....	71	29	20	26	9	16	8	10	11	22	20	20	12	21	3	2	Represents finest material in pit. Most is bouldery gravel. Fresh est.
7	McGowan pit, Lot 13, Con. III, Osnabruck tp	.....	50	50	91	9	10	8	16	32	14	12	8	31	11	10	16	10	10	12	100 per cent Black River est. shaly.
8	N.Y. Central R. pit, Northfield Station, Con. VIII, Cornwall tp	10	40	50	74	26	31	9	15	20	8	9	8	24	14	22	27	7	2	4	About 50 per cent of the pebbles are est. but 50 per cent of it is weathered and soft.
9		.....	85	15	63	37	.....	.....	14	24	20	27	15	17	16	15	33	12	4	3	
10		.....	95	5	46	54	.....	.....	18	25	12	16	29	14	15	14	36	17	1	3	
11	McLeuds pit, Lot 24, Con. VIII, Cornwall tp	.....	80	20	62	38	.....	.....	.....	7	9	21	63	37	21	8	8	7	7	12	Black River est., soft includes weathered pebbles.

Renfrew District.

12		.....	75	25	83	17	.....	..	12	20	21	25	22	25	15	11	14	11	8	16	
13		.....	90	10	73	27	36	18	7	17	6	7	9	15	15	21	31	9	3	6	Dark coloured dense Black River limestone.
14	U. J. McQuillon pit, Lots 30, 31, Con. VI, Cornwall tp	.....	90	10	72	28	39	18	11	15	5	5	7	17	15	19	30	8	3	8	
15		.....	85	15	29	71	.....	...	27	18	13	11	31	13	13	18	25	15	8	8	
16	Winfull pit, Lots 33 to 36, Con. V, Cornwall tp	.....	95	5	54	46	.....	11	17	18	14	18	22	18	9	8	29	31	3	2	Fresh est. pebbles.
17		.....	95	5	65	35	.....	20	21	17	13	13	16	23	12	10	29	22	2	2	
18		.....	95	5	77	23	26	20	7	8	12	13	14	35	12	10	22	17	2	2	
19		.....	95	5	67	33	14	8	13	20	11	14	20	31	15	12	25	15	1	1	
20	Thos. Cleary pit, Moulinette, Lot 29, Con. IV, Cornwall tp	.....	90	10	55	45	10	10	8	21	10	18	23	19	12	26	26	9	4	4	
21		.....	90	10	66	34	.....	.....	20	25	15	18	22	15	13	17	30	15	4	6	

22	Fallon Bros. pit, Cornwall, Lots 7 and 8, Con. II, Cornwall tp		50	50	65	35	24	3	12	20	10	11	20	30	27	17	11	8	3	4	Soft includes weathered est. Intermediate are est. with a small per cent of gneisses, schists, and sandstone.
23			50	50	65	35	50	3	12	9	5	9	12	25	20	20	20	7	3	5	
24			50	50	54	49	16	13	19	22	8	8	14	15	17	20	23	13	5	7	
25			40	60	46	54		24	6	16	10	16	28	20	20	20	20	9	4	7	
26	John McIntosh pit, St. Andrews West, Lot 12, Con. V, Cornwall tp		75	25	60	40	10	21	19	12	10	10	18	18	20	23	23	10	2	4	
27			75	25	57	43	25	6	18	14	10	11	16	27	16	18	20	11	3	5	
28	Williamstown pit, 2 miles west of town. Charlottenburg tp		95	5	30	70			6	11	7	16	60	39	30	15	6	3	2	5	Pebbles are composed entirely of Black River limestone, and are of angular shape.
29			95	5	60	40		28	3	16	14	18	21	20	13	15	30	12	4	6	
30			95	5	57	43		13	5	16	12	19	35	32	14	9	21	14	5	5	
31			95	5	62	38		10	9	21	11	22	27	35	28	20	8	3	2	4	
32	Riviere Baudet, Que., pit south of river road		95	5	68	32		20	14	18	9	13	26	47	17	7	9	7	5	8	Intermediate are shaly limestone with small per cent of sandstone.
33			95	5	82	18			10	37	24	20	9	20	17	18	15	9	7	14	
34	Municipal pit, town of Renfrew	90	10			100										5	30	47	14	4	
35		90	10			100								6	13	30	30	15	4	2	
36		85	10	5	27	73			6	10	22	62	21	35	28	10	3	1	2		Rounded pebbles.
37		60	25	15	16	84			22	26	15	13	24	28	20	18	11	9	9	8	Much coarser gravel to be found in north-western wall of pit with large per cent of boulders.
38	G.T.R. pit, 2 miles southeast of Renfrew				18	82				13	9	22	56	14	13	20	37	12	2	1		Round grains.
39		95		5	50	50		19	10	18	11	13	27	27	22	15	14	12	6	4	Rounded pebbles.
40		40	30	30	47	53			10	13	10	17	50	40	19	10	8	13	7	3	Rounded pebbles.
41	1½ mile northwest of Renfrew					100									3	10	38	30	10	9	Brown sand.
42						100									1	12	42	30	11	4	Reddish sand.
43		30	30	40	55	45	11	10	18	19	10	9	23	24	24	22	15	7	4	4	Rounded pebbles.
44		50	20	30	22	78				8	7	8	77	29	30	21	11	5	2	2	Rounded pebbles.
45		30	20	50	50	50	15	14	17	18	6	10	20	26	32	22	11	5	2	2	Rounded pebbles.

(1) Durable stands for igneous rocks of fresh character.
Intermediate stands for fresh limestone, dolomite and sandstone.
Soft stands for any of the above rocks if weathered, schists, shales.

TABLE IV.

Results of Tests on Gravel Samples.

Sample No.	Fineness modulus	Per cent clay and silt	Colour test.	Sand Mortar 1: 3 mix (1)					Remarks.
				Water used.	Inside strength lbs. per sq. in.		Compressive strength lbs. per sq. in.		
					7 days.	28 days.	7 days.	28 days.	
				%					
			(Along	St. Law	rence R	iver fro	m Morr	isburg,	Ont., to Quebec Boundary.)
1	3·27	8·0	100	12	226	366	2,720	4,000	Dark coloured sand containing shells in large quantity.
2	3·25	.....	50	13	258	411	2,740	3,900	
3	2·95	1·3	50	11	411	520	3,850	5,540	Dark coloured sand, $CuCo_3$ on pebbles, moderate amount of shells, rather clean.
5	4·07	1·3	0	10	339	440	2,850	3,580	
9	2·72	7·0	100	11	261	396	2,310	3,620	No shells, dark coloured sand.
12	2·57	20·0	600	20	100	157	920	1,345	Very dusty sand, clayey, carrying impurities
13	2·69	7·6	100	14	230	329	2,370	3,700	Yellowish brown sand with shells, rather clean.
15	2·36	12·0	0	12	336	441	2,800	4,400	Clean sand, no shells.
16	2·39	4·1	50	11	241	300	1,760	2,250	Clean sand with a good deal of shells up to $\frac{1}{4}$ inch in size.
19	3·16	.....	0	11	319	405	2,800	3,600	
23	3·12	8·1	400	12	277	371	2,220	3,780	Very little shells, some impurities.
25	2·89	14·0	400	15	218	313	2,380	3,220	
27	3·04	11·1	75	12	260	378	2,490	3,700	Dusty, but no injurious impurities.
									(Renfrew District.)
34	1·23	.....	25	17	129	198	950	1,560	Clean reddish sand carrying mica in moderate amount.
35	2·45	4·0	0	12	207	347	1,635	2,260	Grains cemented together with $CaCo_3$ iron oxide present, no organic matter.
37	3·02	15·3	0	10	440	583	3,680	5,350	Clean sand carrying some clay.
41	1·48	16·2	600	15	126	227	1,360	2,160	Yellowish-brown saad, mica, and iron oxide present.
42	1·54	7·6	0	16	160	261	1,166	2,220	
43	3·19	.....	0	13	272	360	2,250	2,970	Reddish sand, mica in moderate quantity.
45	3·51	.....	0	10	445	505	3,000	4,435	Clean reddish sand.

(1) Ottawa standard sand, strength of 1:3 mortar; tensile, 7 days— 174 lbs. per sq. in.
" 28 days— 292 lbs. per sq. in.
Compressive 7 days—1,540 "
" 28 days—2,275 "

IV.

ROAD MATERIALS AVAILABLE ALONG THE ST. LAWRENCE RIVER, BETWEEN PRESCOTT AND KINGSTON.

R. H. Picher.

An investigation of road materials for highway construction between Prescott and Kingston, along the St. Lawrence river, was conducted during the field season of 1919. The work was started one mile east of the Algonquin-Maitland road in Augusta township, i.e., at the western limit of the area examined in 1915, and was carried on as far west as the Joyceville side road in Pittsburgh township. The district covered extends along the river for a distance of 45 miles, to a depth of from 3 to 5 miles, making a total area of about 180 square miles. The Prescott-Kingston highway will probably be part of the proposed improved Montreal-Toronto trunk road.

The area examined is characterized topographically by steep-sloped, rocky ridges, separated by flat-bottomed depressions, some of which are marshy. In the vicinity of Brockville, and around Lansdowne, the country is more in the nature of a plain, with low, flat-topped hills, partly rocky, partly boulder clay, and sand.

Rocks of the Pre-Cambrian era cover wide areas between Brockville and Kingston. The granites, quartzites, and gneisses are the most important types. Diorite, trap rock, and crystalline limestone, occur, but only in very small outcrops. Of the Palæozoic rocks, Potsdam and Beekmantown sandstones are exposed in many places among the Pre-Cambrian rocks; and north and east of Brockville there are many exposures of Beekmantown dolomites. Chazy shales and Black River limestone are seen in two small outcrops near Pittsferry. The latter is exposed at many points in and around Kingston.

The unconsolidated deposits consist of boulder clay, gravel, clay, and sand. Boulder clay occurs only east of Brockville in small flat-topped hills. Gravel occurrences are all of small extent, and are found in most cases as pockets or layers in much larger sand deposits. Clay covers the largest part of the district, occupying all the flat land and the depressions between rock ridges. The largest sand deposits lie around Brockville. One of these is found three miles west of that town, where it starts as a flat table, and runs as a very narrow belt along the river shore as far as Rockport. Other deposits of very small extent occur around Gananoque.

The results of tests performed on samples collected are given in the following tables:—

TABLE I.

Results of Tests Upon Bed-rock.

Locality.	Rock type.	Physical properties.					
		Wear	French coeff. of wear.	Toughness.	Hardness.	Specific gravity.	Water absorbed, lbs. per cu. ft.
		%					
Todd's quarry, 3 miles N.W. of Gananoque	Syenite	2·4	16·8	12	18·8	2·74	0·32
Keyes' quarry, close to Gananoque	"	2·9	13·8	8	18·8	2·73	0·35
Street and O'Brien's quarry, 3 miles N.W. of Gananoque	"	2·6	15·3	8	18·9	2·72	0·30
Dano's quarry, close to Gananoque	"	2·5	16·3	9	18·8	2·75	0·30
Seal's quarry, 3 miles N.W. of Gananoque	"	2·7	14·8	8	18·5	2·71	0·40
Kidd's quarry, 1½ mile N. of Gananoque	"	2·7	14·8	8	19·1	2·69	0·27
Gordon's quarry, close to Findley station	"	2·5	16·3	8	19·1	2·69	0·24
Can. Granite Co's quarry, 1 mile E. of Barriefield	Granite	2·6	15·5	9	19·2	2·69	0·32
1½ mile W. of Brockville.[1]	"	4·1	9·9	5	18·5	2·70	0·73
5 miles N.E. of Gananoque	Altered granite	2·9	13·8	20	19·2	2·64	0·41
1½ mile S.W. of Lansdowne	"	1·8	22·2	18	18·9	2·68	0·40
McKee Bros.' quarry, 1 mile N.E. of Mitchellville	Granite	2·3	17·4	12	18·9	2·66	0·32
2 miles W. of Mallorytown	"	2·1	19·1	18	19·0	2·64	0·76
3 miles N.E. of Gananoque	Granite-gneiss	1·9	20·6	14	18·9	2·64	0·45
Close to Escott	Gneiss	2·6	15·4	14	18·2	2·72	0·27
2 miles E. of Findley station	"	2·1	19·5	9	18·1	2·92	0·54
1 mile W. of Gananoque		3·8	10·5	8	17·1	3·00	0·63
2 miles N.E. of Escott	Diabase	2·2	18·2	16	15·6	2·82	0·33
½ mile W. of Gananoque	Gabbro	2·4	16·9	18	18·5	3·04	0·58
Corporation of Brockville quarry	Quartzite	2·7	14·8	7	19·5	2·65	0·24
Kilbourn's quarry, 2½ miles W. of Brockville	"	3·0	13·3	8	19·5	2·65	0·41
Close to Gananoque	"	4·0	10·0	2	19·5	2·61	1·03
Bolin's quarry, 1 mile E. of Lyn	Sandstone	7·6	5·3	4	17·3	2·50	2·20
McDonald's quarry, ½ mile E. of Gananoque	"	6·0	6·7	8	17·8	2·53	2·30
Worden's quarry, 2 miles N.W. of Brockville	Dolomite	2·8	14·3	13	15·7	2·79	0·71
Sherwood's quarry, 1½ mile N.E. of Brockville	"	2·8	14·5	15	15·4	2·81	0·53
Dunham's quarry, 3 miles N.E. of Brockville	"	3·0	13·6	11	15·4	2·81	0·75
Everett's quarry, 1½ mile N.W. of Brockville	"	3·2	12·5	9	15·8	2·83	1·17
Everett's quarry, 1½ mile N.W. of Brockville	Calcareous sandstone	4·3	9·3	.....	.....	2·79	1·02
George's quarry, 1 mile N.E. of Brockville	" "	3·1	12·9	7	18·4	2·71	0·63
McFadden's quarry, near Pittsferry	Limestone	3·8	10·5	9	16·7	2·73	0·17
Ruddy and Monk's quarry, Montreal St., Kingston	"	4·4	9·0	16	14·1	2·75	0·53
Green's quarry, 1½ mile W. of Kingston	"	3·7	10·9	7	14·7	2·73	0·25
Ruddy and Monk's quarry, Perth road, Kingston	"	3·8	10·5	11	16·1	2·73	0·25
McMichael's quarry, 2½ miles N.W. of Kingston	"	3·7	10·8	11	16·3	2·73	0·17
Penitentiary quarry, Kingston	"	3·8	10·5	9	15·3	2·73	0·82
Mouldey's quarry, 1½ mile W. of Kingston	"	3·9	10·3	3	16·0	2·73	0·35
Mrs. Graham's quarry, ½ mile E. of Kingston Mills	"	3·4	11·8	9	16·1	2·73	0·20

[1]Partly weathered.

TABLE II.

Results of Tests on Gravel Samples.

Owner and Location.	Character of Gravel.					Mechanical Analysis.														Remarks.
	[1]Composition %			Size %.		Gravel percentage retained on screens.							Sand percentage retained on sieves.							
	Durable.	Intermediate.	Soft.	Gravel.	Sand.	2½"	2"	1½"	1"	¾"	½"	¼"	8	14	28	48	100	200	Passing 200	
Mrs. Haley's pit, N. of Maitland	35	45	20	44	56	.....	.....	8	20	14	19	39	16	14	15	26	21	4	4	Sample from N. E. wall.
Sand pit, E. of Lyn	.....	.....	.....	.....	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	43	46	7	2	
Sand pit, E. of Lyn	.....	.....	.....	.....	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	48	44	6	2	
Donovan Bros.' pit, E. of Escott	42	0	52	14	80	.....	.....	.....	.....	7	6	87	39	27	7	8	11	5	3	
Donovan Bros.' pit, E. of Escott	.....	.....	.....	55	45	.....	4	4	13	10	23	40	43	30	16	6	2	2	1	
Donovan Bros.' pit, E. of Escott	.....	.....	.....	5	95	.....	.....	.....	.....	16	15	68	3	5	13	37	29	9	4	
L. Donovan's pit, S. of Escott	25	45	30	64	36	.....	2	5	21	19	25	28	21	17	25	24	8	3	2	Coarse gravel.
L. Donovan's pit, S. of Escott	.....	.....	.....	37	63	.....	.....	8	17	11	20	44	19	19	23	22	7	4	0	Fine, dirty gravel.
J. Nadeau's sand pit, N. of Gananoque	.....	.....	.....	5	95	.....	.....	.....	.....	.....	.....	100	8	10	23	50	7	1	1	E. wall, 5 ft. from surface.
J. Nadeau's sand pit, N. of Gananoque	.....	.....	.....	.....	100	.....	.....	.....	.....	.....	.....	.....	.....	2	10	58	25	4	1	W. wall, 10 ft. from surface.
J. Nadeau's gravel pit, N. of Gananoque	60	.....	40	35	65	.....	.....	11	18	15	21	35	23	20	19	23	9	3	3	Streak of gravel below sand.
J. Nadeau's gravel pit, N. of Gananoque	.....	.....	.....	.....	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	5	26	39	28	Silt.
R. Jackson's pit, W. of Gananoque	70	10	20	36	64	.....	11	26	28	6	10	19	9	11	20	32	21	5	2	Streak of gravel, 9 ft. from surface.
R. Jackson's pit, W. of Gananoque	.....	.....	.....	10	90	.....	.....	.....	.....	45	19	36	3	5	14	43	25	7	3	N. E. wall, largely sand.
W. McFadden's pit, Pittsferry	90	.....	10	60	40	26	5	20	18	10	9	12	15	18	27	28	7	4	1	
W. McFadden's pit, Pittsferry	.....	.....	.....	52	48	.....	.....	8	10	12	30	40	24	6	14	38	13	3	2	E. wall, gravel below sand.
W. McFadden's pit, Pittsferry	.....	.....	.....	.....	100	.....	.....	.....	.....	.....	.....	.....	3	12	39	35	8	2	1	E. wall, upper part.

[1]The composition of pebbles from a deposit is determined by inspection of about one hundred pebbles. They are classed as durable, intermediate or soft according as they are composed of rock which would show a per cent of wear of less than 3, between 3 and 6, or over 6, respectively. These three classes mean, practically, pebbles composed of fresh rock of igneous origin, fresh limestone, and weathered pebbles of both types.

TABLE III.

Results of Tests on Gravel Samples.

Owner and Location.	[1] Fineness factor.	[2] Per cent of clay and silt.	[3]Colour test.	[4]Mortars: [1] cement, [1] sand.					Remarks.
				[1]Per cent of water used.	Tensile strength, lbs. per sq. in.		Compressive strength, lbs. per sq. in.		
					7 days.	28 days.	7 days.	28 days.	
Sand pit, E. of Lyn	1·4	1·6	0	16	123	231	995	1,810	
Donovan Bros.' pit, E. of Escott	3·5	.....	0	10	406	545	3,800	5,850	Clean sand.
Donovan Bros.' pit, E. of Escott	1·8	.....	0	15	176	252	1,500	2,490	Clean, sharp sand.
L. Donovan's pit, S. of Escott	3·0	.....	0	11	344	437	3,610	4,525	
J. Nadeau's pit, N. of Gananoque	2·6	.....	0	11	224	339	2,240	3,185	Clean saad.
J. Nadeau's pit, N. of Gananoque	1·8	.....	100	16	143	345	1,380	2,350	Carrying some mica.
J. Nadeau's pit, N. of Gananoque	3·1	5·2	0	11	310	388	2,800	3,900	Iron oxide in sand.
R. Jackson's pit, W. of Gananoque	2·3	.....	0	12	159	210	1,530	1,870	Clean, sharp sand.
W. McFadden's pit, Pittsferry	2·6	12·6	200	12	163	229	2,350	3,380	Loam and iron oxide in sand.
W. McFadden's pit, Pittsferry	2·8	.....	50	11	235	366	1,850	3,120	Clean, reddish sand.

[1]Design of concrete mixture. D. A. Abrams. Bul. No. 1, Structural Materials Research Laboratory, Lewis Inst., Chicago, April, 1919.

[2]Per cent of material passing 200-mesh.

[3]Colorometric test for organic impurities in sand. D. A. Abrams. Circular No. 1, Structural Materials Research Laboratory, Lewis Inst., Chicago, February, 1917.

[4]Ottawa standard sand, strength of 1:3 mortar: tensile 7 days— 174 lbs. per sq. in.
" 28 days— 292 "
Compressive 7 days—1,540 "
" 28 days—2,275 "

DIVISION OF CHEMISTRY.

F. G. Wait, *Chief of Division.*

The following is a general statement and detailed record of the various assays and analyses performed in the Chemical Laboratory situated in the main office building of the Mines Branch, Sussex street, Ottawa, during the calendar year 1919.

Assays for Gold, Silver, and Platinum: from the undermentioned localities:—

(*a*) *British Columbia.*

i. Within five miles of Usk, via Grand Trunk Pacific, near the Skeena river, 3 samples.

ii. The Gold Range near the Big Ledge zinc property, about 16 miles northwest of Nakusp.

iii. Mamette Lake location, Merritt district.

iv. Average sample of a dump on galena claims, 40 miles northeast of Quesnel.

v. From the property of Mr. E. Mobbs, lying close to a road running from Kootenay lake to Trout lake.

vi. Capella claim and Sweetwater claim, Slocan district, 2 samples.

vii. Stouts gulch, vicinity of Barkerville, Cariboo district. From a 43-foot wide vein of quartz in the hydraulic pit.

viii. Nechako mines, Stony creek.

ix. Ledge on Kennedy creek, north fork of Kettle river, 20 miles north of Grand Forks, B.C.

x. Eden claims on Fraser river, 50 miles north of Fort George.

a. Sample taken across lead, Willow creek.
b. Sample taken across lens, Willow creek.

xi. Bridge River area:—

From the Lorne mine, 20 samples.
From the Pioneer mine, 4 samples.
From Copper mountain, 1 sample.
From Anderson lake, Creagh's claim, 1 sample.
From Kinder's claim, and Maud S. claim, 1 sample from each.

xii. Ferguson (Kootenay) Parrsboro claim, 2 samples.

xiii. Britton mountain, 8½ miles above Tulameen.

xiv. Shore of Barclay sound—precise location not specified.

(*b*) *Yukon.*

Dublin gulch, 11 samples.

(*c*) *Manitoba.*

Cross lake, Hire's vein, 2 samples.
Knee lake, Motherlode mineral claim.
" " Painkiller point.
Nickel lake, shore of.

(*d*) *Northwest Territories.*

10 miles south of Pine point, Great Slave lake.

(e) *Ontario.*

Algoma on the line of the Algoma Central and Hudson Bay railway.

i. In township XXV, range 13.
ii. One mile east of mileage 171, from pyrite range.
iii. Two miles east of Pine lake, near Goudreau.

Lanark county, North Elmsley township, lot 28, concession IX.
Renfrew county, McNab township, lot 9, concession IX.
Sudbury district, Norman township, lot 4, concession IV.
Thunder Bay district—

Dorion township, shore of Black bay.
" " Lebel claim, 2 samples.
Gorman township, northeast corner; south shore of Wasp lake, Dafoe claim.
Stirling township, lot 2, concession VI.
Black bay, southeast shore of.
Cascade creek.
Port Arthur, vicinity of, W. R. Brown's claim.
Puff island.
Red Rock, vicinity of, 2 samples.
Sturgeon bay, west side of.

Timiskaming district—

Kirkland Lake Mining Company's property.
Maisonville township, shore of Wolf lake.
Morrisette township, near Goodfish lake, 4 samples.
Munro township, lot 8, concession I.
McIlroy township, from a point 9 miles east of Dane.
Timagami reserve, Sandy inlet, 2 samples.
Tudhope township, precise locality not stated.

(f) *Quebec.*

Beauce county, one mile southeast of the junction of the southeast and north branches of Gilbert river.
Labelle county, Buckingham township, lot 21, range IV.
Pontiac county, North Onslow township, lot 18, range VIII.
Ungava district, eight samples from unspecified localities in the northern part of the district.

(g) *New Brunswick.*

Albert county, vicinity of New Ireland, parish of Alma.
" " Albert mines, shale from, 9 samples.
Unspecified localities, 47 samples.

Barite.

Ontario—Timiskaming district, Langmuir township, from the Premier-Langmuir mine near Connaught station.

Carbonaceous rocks: for carbon content.—

British Columbia—Fraser canyon, and two samples from undesignated localities, one in Quebec and one in Nova Scotia.

Chrome iron ore.

Ontario—Timiskaming district, Rheaume township, lot 10, concession V.

Copper ores.

Ontario—not precisely stated, but from the Keeweenawan series of rocks, north and east of Port Arthur, 3 samples.

Quebec—Ungava 4 samples from unspecified localities in the northern section of the district.

Feldspar.

Ontario—Lanark county, South Sherbrooke township, lot 13, concession V. Complete analysis.

Hydromagnesite.

British Columbia—

1. From a point ¾ of a mile northeast of the village of Clinton.

2. Watson lake, a point 1,500 feet south of, which lies 1½ miles west of Cariboo road, and south of 105-mile House, 2 samples.

3. Meadow lake, one mile east of the east end, situated 16 miles west by north of 70-mile House in Cariboo road, 2 samples.

3a. From a small deposit, 1 mile northwest of Watson lake, near the corral gate.

4. A point at the junction of the north and south forks of Reske creek, west of Chimney Creek bridge on Fraser river.

Iron ores.

(a) *Ontario*—Frontenac county, Robertsville.

(b) *Quebec*—Ottawa county, Hull township, lot 13, C, range VII, Lawless mine.

(c) *Ungava.*—2 samples from undesignated localities in the northern part of the district.

(d) *Northwest Territory*—20 miles from Fort Wrigley in the Mackenzie River region.

Pig-iron and steel.

Seventy samples were submitted to partial analysis, determinations of the carbon content of each being required by the Department of Customs for tariff classification purposes.

Lead ores.

(a) *Yukon Territory*—Lookout mountain, Mayo district.

(b) *Northwest Territory*—10 miles south of Pine point, Great Slave lake.

(c) *British Columbia*—a galena claim 40 miles northeast of Quesnel, Cariboo district. From E. Mobb's property, along Kootenay and Trout Lake road.

(d) *Ontario*—Timiskaming district, Maisonville district, Wolf lake.

Limestones.

(a) *British Columbia*—2 samples from a spring deposit near 141-mile House, Cariboo road.

(b) *Ontario*—

i. Hastings county:—

(a) Dungannon township, Ontario Marble Co's quarry, near L'Amable.
(b) Huntingdon township, Gibson quarry at Crookston.
(c) Madoc township, lot 16, concession V.
(d) Marmora township, lots 7 and 8, concession IV.

ii. Lanark county:—
Bathurst township, lot 3, concession IV.
North Elmsley township, near Otty lake.

iii. Lincoln county:—
Gibson's quarry at Beamsville.

iv. Ontario county:—
Thorah township, lot 22, concession I.

v. Stormont county:—
Finch township, lot 8, concession IX.

vi. Wellington county:—
Puslinch township, J. L. Maloney's quarry, one-half mile west of Puslinch station.

(c) *Quebec*—

i. Joliette county:—
From a quarry on the property of Mme. O. Ferland, 3 miles east of Ste. Elizabeth.

ii. Missisquoi county:—
Lot 4 west, Parish of St. Armand, 2 samples.

(d) *New Brunswick*—
Moncton map area—one sample from Boyd creek, and one from Windsor quarry.

(e) *Nova Scotia*—
Cape Breton county:—
From a quarry at Eskasoni, Georges river.

Manganese ores.

British Columbia—11 miles southwest of Clinton

Quebec—Arthabaska county, Chester township, precise locality not stated.

Nova Scotia—Colchester county, Clifton, Black Rock, Thos. H. Donaldson's property.

Mercury ores.

British Columbia—one-half mile from the mouth of a small creek which enters Sechart channel, Barclay sound, just east of Sechart whaling station.

Nickel ore.

A pyritiferous schist from a point two miles southeast of Dartmouth, *Nova Scotia*, and two samples from undesignated localities.

Potash-bearing materials.

(a) Salt—crude sodium chloride:
Four samples, from the salt deposit at Malagash, Cumberland county, *Nova Scotia*.

(b) Cement and the raw material of the same from the Canada Cement Co's works at Winnipeg, Belleville, and Montreal, 8 samples.

(c) Feldspar, one sample of orthoclase from lot 13, concession V, South Sherbrooke, Lanark county, *Ontario*.

Pyrite.

Ontario—

Algoma district:—

From a pit of so-called "natural fines", on M.C.A.C. 44, near Goudreau. One mile east of mileage 171, Algoma Central and Hudson Bay railway.

Hastings county:—

Madoc township:—

i. Lot 18, concession II, Morrison's property.
ii. Lot 18, concession V, Eldorado copper mine.
iii. Lot 12, concession VI.
iv. Lot 25, concession VI, Bannockburn mine.
v. Lot 6, concession VII.
vi. Lot 9, concession X.
vii. Craig mine, 2 samples.

Kenora district:—

Eagle lake, Net island.

Nipissing district:—

i. Mining claim, W.D. 357, 2 samples.
ii. Cassell township, Net lake, east side, Mandy's claim.

Rainy River district:—

Nickel lake, near Fort Frances, Preston claim.

Sudbury district:—

i. Norman township, lot 2, concession VI, 2 samples.
ii. Unsurveyed territory, south of townships of Dale and McOwen, 2 samples.

Thunder Bay district:—

i. M.L. 2831, near Schreiber.
ii. Vicinity of Mokeman, near Port Arthur.
iii. Hornick's claim, near Stainton station, Canadian Northern railway.
iv. Atikokan iron mines, 2 samples.

Timiskaming district:—

i. Boston township, M.R. 14, Kirkegarde's claim.
ii. Eby township, lot 2, concession III, Swastika.
iii. Tisdale township, Moyer's Veteran claim, Porcupine.
iv. Tisdale township, Wright's claim, Bob's lake, 2 samples.

Quartz, quartzites, sandstones and silica sands, for industrial purposes.

Manitoba—

Big island, Lake Winnipeg, 2 samples.

Ontario—

Algoma:—

Near Bellevue, on Algoma Central Railway, in Vankoughnet township.

Carleton:—

Nepean sandstone quarries at South March.

Frontenac:—

Portland township, west half lot 16, concession XI.
" " lot 16, concession X.
Loughboro " lot 10, concession VII.

Haldimand:—

Cayuga township, Nelles Corners, Oneida Lime Co's property.

(a) Crushed and washed sample.

(b) Washings from sandstone.

Oneida township, north end of the southwest quarter of lot 49, concession I.

" " south quarter of lot 47, concession I, and northwest eighth part of lot 46, concession I, an average sample of two deposits.

Halton:—

Nassagaweya township, lot 3, concession VII, Robinson's quarry.

Hastings:—

Dungannon township, lot 22, concession II, near Turiff station, Canadian Northern railway.

Elzevir township, lot 3, concession IV, from the east bank of Moira river, north of Actinolite, Ont.

Madoc township, east half of lot 5, concession X.

Lanark:—

North Elmsley township, one mile and a half east of Perth, on the north bank of the Tay canal. J. Menzies' property.

Lavant township, one mile and a half northwest of Clyde Forks. Property of T. B. Caldwell.

a. From north half.

b. From south half.

South Sherbrooke township, lots 12 and 13, concession VIII.

South Sherbrooke township, lot 6, concession VII, Rinaldo McConnell's property.

South Sherbrooke township, south half of lot 9, concession IV.

Leeds:—

Elizabethtown township.

i. South half 22, concession II.

ii. Bresee's property, 2½ miles west of Brockville.

Sudbury district:—

From mileage 65 on Algoma Eastern railway.

Thunder Bay district:—

i. Malcolm Watty's property on Wolfe river, seven miles north of Dorion station.

ii. Same locality as preceding, material found imbedded with dolomite and sandstones.

iii. Simpson island, Lake Superior.

iv. Submitted by Mr. Marks, Port Arthur; said to be from Thunder Bay district.

v. Quarry near entrance to Black bay, W. Long. 86/31/05, N. Lat. 48/33/10.

Welland:—

Bertie township, Lake Erie front, lot 13, Flint.

Quebec—

Beauharnois, Molocheville. From the Montreal Sand and Gravel Co's quarry.

Chateauguay:—

i. Russelltown, lot 6, range III. From the farm of G. H. Brooke.

ii. Two and a half miles west of Russelltown, on the road to Stockwell. From the farm of B. Roberts.

Hull:—

i. Quartz from the stockpile of the Electric Reduction Co. at Buckingham. Found in association with the feldspar in the Lièvre River district.

ii. Sandstone from Bilsky's property at East Templeton.

Labelle:—

St. Rémi d'Amherst. Quartzite from the Canadian China Clay Co's property. Same locality as preceding. Washed sand.

Missisquoi:—

One mile east of St. Armand station, on road to Mitchell's Corners. Sandstone.

Soulanges:—

i. Cascades point, Cascades Silica Products Co's quarry. Crushed sandstone.

ii. Same locality as preceding. Washed silica sand.

Timiskaming:—

Crushed sandstone from the Quebec shore of Lake Timiskaming, opposite Haileybury, Ont.

Two Mountains:—

St. Canute. Sandstone from the Stinson-Reeb quarry.

New Brunswick—

Moncton Map Area:—

Sample of sandstone from an undefined locality, submitted by Mr. W. J. Wright of the Geological Survey.

St. John county:—

Sandstone from a deposit one-half mile north of Torryburn station.

Nova Scotia—

Cape Breton county:—

Quartzite from the stockpile of the Dominion Iron and Steel Co. at Sydney. Locality of its occurrence, not stated.

Inverness county:—

Whycocomagh. Quartzite.

Queen's county:—

Port Mouton,—

i. Silica sand from Summerville beach.

ii. Silica sand from the southwest beach.

Shelburne county:—

Barrington bay, silica sand from beach.

Salt: crude sodium chloride.

Nova Scotia—Cumberland county:—

Malagash salt deposit, 7 miles from Malagash station, 4 samples.

Natural waters.

British Columbia—

Saline water from a soda lake in Cariboo district, near 70-mile House.

Ontario—

From a spring on the mainland of Thunder cape, one-half mile east of lake Marie Louise, and directly opposite Silver islet.

Nova Scotia—Plumweseep; and

five other samples, the locality of which was not stated.

DIVISION OF MINERAL RESOURCES AND STATISTICS.

JOHN MCLEISH, *Chief of the Division.*

I

GENERAL REVIEW.

The staff of this division has, during 1919, been as usual, chiefly occupied with the duties involved in the collection of statistics and of information respecting the mining and metallurgical industries of Canada, the preparation of annual reports on mineral production, trade and consumption, supplemented by the preparation of numerous special memoranda respecting the occurrences of mineral resources and their utilization.

The annual report on mineral production is designed to present not only a complete annual inventory of the mining and metallurgical industries of Canada, but includes for each mineral product a discussion of trade conditions, imports, exports, domestic consumption, prices, and, from time to time, descriptions of methods of preparation of ores and mineral products, their uses and markets.

The report is based upon statistical data collected by correspondence from some 3,800 smelter, mine, and quarry operators throughout the Dominion, supplemented by records of ore and mineral shipments furnished by railway companies, by records of ore receipts furnished by smelting companies both in Canada and in the United States, and by other data having a direct bearing on mineral production or on mineral consumption.

This series of annual records dates from 1886 and it has been the practice from the beginning to anticipate the complete report, the publication of which must necessarily, for various reasons, be delayed until late in the year, by the issue, two months after the close of the year covered, of a "Preliminary Report on the Mineral Production of Canada." While subject to revision, the statistical records of this preliminary report, particularly in recent years, have been found in most products to approximate very closely indeed to the final records.

Since 1907 the publication of the complete annual report has been preceded by the advance publication of separate chapters, as the compilation was completed, on the more important mineral products, these advance chapters being reprinted, and included in the annual report.

Thus, not only have the final and complete statistical records been available more promptly, but the publication of separate parts has made the data more readily available to those interested in particular subjects.

During the last three years of the war the annual collection of production statistics was supplemented by monthly, or quarterly records of a number of the more important mineral products, particularly those the production of which became of first importance in the successful prosecution of the war. These included monthly records of the production of pig-iron and steel, of chromite, coal, pyrites, sulphuric acid, etc. The data thus obtained were furnished to the Fuel Controller, the Mineral Resources Commission, the War Trade Board, and other interested departments. In addition to the statistical records, numerous special memoranda and reports were prepared for the information of war boards and commissions, as well as for the Imperial and United States Governments, on the possible and probable production in Canada of many "war minerals."

During the few months immediately following the tenth of March, 1919, the greater part of the time of the chief of this division was taken up with the duties of the acting directorship of the Mines Branch. On this account, and in order to facilitate the more prompt publication of the final mineral production record, the annual report on mineral production in 1918, was submitted for publication in greatly abbreviated form.

Separate reports dealing more completely with the production of the metals, and of coal and coke, were completed and published as usual, but were not reprinted in the annual report for the year.

In the completion of the final reports on mineral production Mr. A. Buisson has again compiled the statistics with respect to metals and metallic ores, and has prepared the report on production of gold, silver, copper, lead, nickel, silver, zinc, and other miscellaneous metals. He has also revised the list of "Metal Mines."

The report on production of iron and steel in 1918 was compiled by the writer.

Mr. Casey has, as usual, compiled all the statistics of the production of non-metalliferous products and structural materials, as well as the records of imports of mineral products, and has prepared for printing the various lists of mine and quarry operators, with the exception of the "Metal Mines" and "Metallurgical Works" lists.

The following reports and lists were completed during the year and submitted for printing on the dates indicated:—

Reports—

Preliminary Report on the Mineral Production of Canada, during the calendar year 1918—February 27, 1919.
Annual Report on the Mineral Production of Canada, during the calendar year 1918—September 5, 1919.
The Production of Copper, Gold, Lead, Nickel, Silver, Zinc and Other Metals in Canada, during the calendar year 1918—September 19, 1919.
The Production of Coal and Coke in Canada, during the calendar year 1918—November 11, 1919.
The Production of Iron and Steel in Canada, during the calendar year 1918—December 23, 1919.

List of Mine Operators—

Petroleum and Natural Gas Wells, including a list of Petroleum Refineries—August 23, 1919.
Coal Mine Operators in Canada—September 17, 1919.
Non-Metal Mines in Canada (other than coal mines, oil and gas wells, clay, and stone quarries, etc.)—October 2, 1919.
Cement Mills and Sand-Lime Brick Plants—October 6, 1919.
Manufacturers of Clay Products—October 22, 1919.
Lime Kilns in Canada—October 24, 1919.
Stone Quarry Operators in Canada—October 31, 1919.
Operators of Sand and Gravel Pits—November 11, 1919.

CO-OPERATION WITH THE DOMINION BUREAU OF STATISTICS IN THE COLLECTION OF MINERAL PRODUCTION STATISTICS FOR 1917, 1918, AND 1919.

Pursuant to an arrangement entered into with the Dominion Bureau of Statistics the complete files of statistical production records for the years 1917 and 1918, collected by this division, were made available to the Dominion Bureau of Statistics of the Department of Trade and Commerce. The same co-operation is being continued in respect to the mineral production records for the calendar year 1919.

II.

MINERAL RESOURCE INDEX AND RECORDS.

This division has since its organization in 1886 maintained a card index to mineral occurrences and resources, and a file of records of mines and mining works in Canada.

The mineral resource index comprises a card index system of references to Canadian mineral occurrences contained in the reports of the Dominion Department of Mines; the various provincial mines reports, and the proceedings and transactions of mining, geological and other scientific societies. This index is arranged under the headings of the metals and non-metallic minerals of economic importance.

As a considerable amount of mining and geological literature is annually published, a good deal of time is required to keep the index up to date; and during the past year or two the growing demands of our mining statistical work have occupied the entire attention of the staff to the exclusion of this most valuable and essential work.

The mineral resources record file is an amplification of the card index mentioned above and is arranged in the same general order. Instead of references, however, it is designed to contain actual records of mining works and mining development obtained from all sources, such as through correspondence, field investigations by the staff of this division, reports on mine development collected and prepared by the field staff of the Geological Survey and Mines Branch, papers and data extracted from the scientific journals and mining press. It provides a convenient and systematic method for the filing of mining plans, photographic prints, annual reports of mining companies, and in fact all classes of records pertaining to mining work.

This record has never had the attention which its great importance deserves, and has been kept up only to the extent permitted by an already over-worked staff. Its proper development will require the services of fully qualified technical engineers.

The great importance of an inventory of Canadian mineral resources was actually realized during the war, and the Munition Resources Commission undertook to card index as completely as possible those mineral resources of the Dominion, particularly required for munition purposes. This work was carried on with the assistance of the staff of the Department of Mines and in close co-operation with this division. The card reference system already developed was used as the basis for a much more comprehensive and inclusive system of inventory cards which not only furnished the references to sources of available information but contained also a synopsis of the essential and useful information respecting each individual mine or resource catalogued.

A complete detailed description of this index has been published in the final report of the Munition Resources Commission, pages 204-208.

On the dissolution of the Mineral Resources Commission this inventory, so far as it had been compiled, together with a complete set of cards, guides, etc., was turned over to this division. As soon as the necessary assistance can be provided the work should be continued and amplified.

III.

FIELD WORK.

The writer attended the annual meeting of the American Institute of Mining Engineers held in New York in February, and the annual convention of the Canadian Mining Institute held in Montreal during the first week in March, where as usual the preliminary report on the mineral production of Canada was presented.

The Department of Mines shared with the Water Powers Branch of the Interior Department a booth space at the Fifth National Exposition of Chemical Industries held at Chicago, September 22-27, for the purpose of furnishing information respecting the mines and mineral resources and industries of Canada. The mines information bureau was placed under my direction, assisted by Mr. L. L. Bolton.

From Chicago I proceeded to Pittsburgh and attended as one of the official representatives of the Department of Mines and also of the Canadian Mining Institute, the formal dedication of the new laboratories, Pittsburgh experiment station of the United States Bureau of Mines.

Mr. A. Buisson attended at the Canadian Mining Institute annual convention in Montreal in March, and in September and October visited a number of the mining districts in Northern Ontario and Quebec, and with respect to the latter reports as follows:—

"Following instructions from Mr. McLeish, the writer left Ottawa September 10, 1919, for a visit to the different mining camps in the Timiskaming district of Ontario, and also to Amos, Notre Dame des Anges, and Shawinigan Falls, Que.

"The labour troubles which occurred in the summer and fall of 1919 were the cause of many properties closing down. When the writer visited the Kirkland Lake district the strike of the miners had not yet been settled and all the mines were idle. New districts such as Boston Creek which had started the season most favourably were all badly hit by the effect of the strike and very little work was being done.

"The strike in Cobalt was settled towards the middle of September, but most properties could not resume operations on a normal scale until October.

"The scarcity of labour, and the high costs of labour and supplies were a serious handicap in the Porcupine district, so that the only producers in October were the Hollinger, Dome, McIntyre, and Davidson mines.

"A brief visit was made to Amos, Quebec, but the bad weather prevented any visit to the camp, which is about 40 miles south of the town of Amos. Professor Mailhiot of the Ecole Polytechnique spent the summer in this district, and his report will appear in the Provincial Bureau of Mines Report for 1919.

"A visit was made to the zinc-lead mines of Notre Dame des Anges, Quebec, and a day spent at Shawinigan Falls, visiting some of the metallurgical plants.

"A brief stop was made in Montreal to interview the officers of some of the companies operating in the province of Quebec.

"All told, the trip lasted one month, and much information was gathered in connexion with the different companies operating in the districts visited, and about the metallurgical processes in use."

IV.

MINERAL PRODUCTION DURING 1919.

The mineral production of Canada during the calendar year 1919 has as usual been the subject of the preliminary report published February 28, 1920. As the revised figures are now available they are presented in the following table:—

In an analysis of the mineral production during 1919 it was stated in the preliminary report, and the comment applies equally to the revised record, that:—

> "The wide range of prices through which many metals and mineral products have passed during the past five years, and the continuation of high prices for many products, have of course resulted in greatly increasing the total value of the mineral production, even when the actual quantities of metals or minerals obtained might be decreasing. It is evident that less importance should be given to comparisons in values and that more stress should be laid upon quantity comparisons. This may be readily done with individual products, but appears less feasible when dealing with totals of a great variety of products."

"Just as the declaration of war in 1914 was followed by a short period of industrial dislocation before the activity necessitated by the war's requirements became fully launched, so, following the cessation of hostilities, there has been an interregnum, or transition period, during which the war's demands are being replaced by the legitimate requirements of peace industries and the demands of reconstruction."

"The difficulties of making these readjustments have been aggravated by social upheavals and strikes."

"The net falling off in mineral production in 1919 has been a mean between a large decrease in the production of metals, coal, and many "war minerals" such as chromite, graphite, magnesite, pyrites, etc., on the one hand, and large increases in the production of structural materials such as cement, clay products, lime, and building stone, and also of asbestos, gypsum, and salt."

The metallic production in 1918 was valued at $114,549,152, which fell in 1919 to $73,262,793, a decrease of $41,286,359 or 36 per cent. Gold is the only metal of which there was an increased production. The falling off in the quantities of other metals varied from 8·2 per cent in zinc to nearly 52 per cent in nickel.

The total value of the non-metallic production, including clay and quarry products, in 1919 was $103,423,597 as compared with $95,752,745 in 1918, showing an increase of $7,670,852, or 8 per cent. The cement, clay, and stone products alone were valued at $27,421,510 as against $19,130,799 in 1918, an increase of $8,290,711, or over 43 per cent. The total value of non-metallic products other than structural materials was $76,002,087 as against $77,621,946, a decrease of $1,619,859, or 2·1 per cent.

V.

MINERAL PRODUCTION OF CANADA DURING 1919.

(Revised Statistics.)

		Quantity.	Value.
			$
Metallic.			
Antimony ore	[1]Tons.	Nil.	Nil.
Antimony refined	Lbs.	Nil.	Nil.
Cobalt, metallic and contained in oxide, etc., at $2.50 per lb	"	530,371	1,325,928
Copper, value at 18·691 c. per lb	"	75,053,581	14,028,265
Gold, at $20.671834 per oz	Ozs.	766,764	15,850,423
Iron, pig, from Canadian ore, (a)	Tons.	38,457	899,406
Iron ore sold for export, (b)	"	5,883	46,525
Lead, value at 6·966c. per lb	Lbs.	43,827,699	3,053,037
Molybdenite	"	83,002	69,203
Nickel, value at 40c. per lb	"	44,544,883	17,817,953
Platinum and palladium, (c)	Ozs.	110	7,131
Silver, value at 111·122c. per oz	"	16,020,657	17,802,474
Zinc, value at 7·338c. per lb	Lbs.	32,194,707	2,362,418
Total metallic			73,262,793
Non-Metallic.			
Actinolite	Tons	80	880
Arsenic, white and in ore	"	3,389	509,924
Asbestos	"	136,765	10,909,452
Asbestic	"	22,471	65,917
Chromite	"	8,511	228,898
Coal	"	13,681,218	54,413,349

[1]Short tons throughout.

MINERAL PRODUCTION OF CANADA DURING 1919—*Concluded.*

(Revised Statistics.)

		Quaatity.	Value.
Feldspar	Tons.	14,679	$ 86,231
Fluorspar	"	5,063	97,837
Graphite	"	1,360	100,221
Graphite, (artificial)	"	179	
Grindstones	"	2,020	60,516
Gypsum	"	299,063	1,215,287
Magnesite	"	11,273	328,465
Magnesium sulphate	"	738	9,115
Manganese	"	661	14,159
Mica	"	2,754	273,788
Mineral pigments:—			
Barytes	"	468	8,154
Oxides	"	11,862	113,427
Mineral water	"	.....	71,015
Natural gas	M. cu. ft.	19,937,769	4,176,037
Peat	Tons.	986	6,561
Petroleum	Brls.	240,466	736,324
Phosphate	Tons.	24	331
Pyrites	"	176,487	522,704
Quartz	"	94,991	527,635
Salt	"	148,301	1,397,929
Talc	"	18,642	116,295
Tripolite	"	565	11,300
Strontium	"	48	336
Total non-metallic		.....	76,002,087
Structural Materials and Clay Products.			
Cement, Portland	Brls.	4,995,257	9,802,433
Clay products:—($7,906,366)—			
Brick, common	No.	291,469,996	3,850,219
Brick, pressed	"	74,423,703	1,304,162
Brick, paving	"	.....	.....
Brick, moulded and ornamental	"	364,682	10,175
Fireclay and fireclay products, (d)		.....	389,354
Fireproofing	Tons.	41,406	345,382
Hollow building blocks	No.	1,984,848	76,673
Kaolin	Tons.	759	13,744
Pottery, (d)		.....	185,474
Sewer pipe	Tons	62,821	1,074,146
Terra cotta		.....	40,527
Tile, drain	No.	20,078,000	616,510
Lime	Bush.	7,147,504	2,310,607
Sand-lime brick	No.	33,553,699	484,854
Sand and gravel	Tons.	10,364,481	2,680,460
Slate	Sq.	1,632	10,853
Stone:—($4,225,937)			
Granite		.....	850,563
Limestone		.....	3,074,815
Marble		.....	213,982
Sandstone		.....	86,577
Total structural		.....	27,421,510
Grand Total		.....	176,686,390

(a) The figures given represent only the quantity of pig-iron made in Canada, estimated as derived from Canadian ore. The total production of blast furnace pig-iron was 910,080 tons, valued at $24,245,792.

(b) The total shipments of iron ore from Canadian mines were 195,970 tons, valued at $687,386.

(c) The figure given represents only the reported recovery of metals of the platinum group in Canada. There is in addition a considerable recovery of these metals in New Jersey and in Wales from the nickel-copper mattes produced in the Sudbury District, of which only a partial record is available.

(d) There is also a considerable production from imported clays. The total values of the production from both domestic and imported clays were: Fireclay products $453,487; Pottery, $890,320.

DRAUGHTING DIVISION.

H. E. Baine, *Chief Draughtsman.*

The work of this division for the past year consisted in the preparation of magnetometric maps, and of various mechanical drawings, diagrams, charts, etc., and the preparing and printing of maps for the Canadian Munition Resources Commission.

The following is a list of maps published during the calendar year 1919:—

No. 513. Graphite occurrences in Bedford, Loughborough, Burgess, and Elmsley townships, Ontario.
Scale: 3·95 miles to one inch.

No. 514. Graphite occurrences in Monmouth, Cardiff, Monteagle, and Dungannon townships, Ontario.
Scale: 3·95 miles to one inch.

No. 515. Graphite occurrences in Brougham and Blythfield townships, Ontario.
Scale: 3·95 miles to one inch.

No. 516. Graphite occurrences in Grenville and Wentworth townships, Quebec.
Scale: 3·95 miles to one inch.

No. 517. Graphite occurrences in Amherst township, Quebec.
Scale: 3·95 miles to one inch.

No. 518. Graphite occurrences in Buckingham and Lochaber townships, Quebec.
Scale: 3·95 miles to one inch.

No. 523. Gas and Oil Fields, and Pipe Lines in Southwestern Ontario.
Scale: 15 miles to one inch.

No. 524. Petroleum, Natural Gas, and Bituminous Sands in Western Canada.
Scale: 200 miles to one inch.

Main Gas Line, Bow island to Calgary, Alberta.
Scale: 12½ miles to one inch.

No. 526. Location of Natural Gas Wells in British Columbia.
Scale: 35 miles to one inch.

227 mechanical drawings, diagrams, charts, and flow sheets.
95 black and white prints.
230 blue prints.

Maps prepared for the Canadian Munition Resources Commission:—

British Columbia	scale:	17½	miles	to	one inch.
Alberta	"	17½	"	"	"
Saskatchewan	"	17½	"	"	"
Manitoba	"	17½	"	"	"
Ontario	"	17½	"	"	"
Quebec	"	17½	"	"	"
Prince Edward Island	"	8	"	"	"

REPORT COVERING THE OPERATIONS OF THE DOMINION OF CANADA ASSAY OFFICE, VANCOUVER, B.C., DURING THE YEAR ENDING DECEMBER 31, 1919.

By G. Middleton, *Manager.*

I have the honour to submit herewith report covering the operations of the Dominion of Canada Assay Office, Vancouver, B.C., for the calendar year ending December 31, 1919, accompanied by statements showing assayers' and melters' supplies on hand.

In the report for the previous calendar year, attention was drawn to the fact that on January 24, 1918, instructions were received to ship the gold bullion purchased by this office to the Royal Mint at Ottawa, but that the returns did not compare favourably with those of former years. As can be seen from this report, under the heading "Disbursements, Receipts, etc.," there is a considerable improvement, as it shows a difference in favour of this office of $643.59, whereas last year's report showed a difference against this office of $659.43. This is due in part to the change made at the mint in July, 1919, viz., in reporting our rough gold to the next quarter-thousandth part (as has been the custom at this office for several years) instead of to the next half-thousandth part. The abnormal rise in the price of silver between the time of the purchase of the bullion at this office and its arrival at the mint, also accounts for a part of the difference in favour of this office.

I.

There were 1,391 deposits of gold bullion received, melted, assayed and purchased; before disposing of same the small deposits were assembled and melted into large bars, which were also assayed. A total of 1,457 meltings and 1,457 assays were required in connexion with the purchase and disposal of the bullion, all assays being run in quadruplicate.

11,500 cupels of various sizes were made and 334 pounds of slag treated and the values contained in same recovered.

The aggregate weight of the gold bullion deposits before melting was 209,028·32 troy ounces, and after melting 205,949·72 troy ounces, showing a loss in melting of 1·4728 per cent. The loss in weight by assaying was 17·67 troy ounces, making the weight of bullion after melting and assaying 205,932·05 troy ounces, the average fineness of same being ·827¾ gold and ·135 silver.

The net value of the gold and silver contained in deposits was $3,547,524.93 and was received from the following sources:—

Source.	Number of Deposits.	Weight.		Net Value.
		Before melting and assaying.	After melting and assaying.	
		(troy ozs.)	(troy ozs.)	$ cts.
British Columbia	911	97,721·96	95,113·30	1,730,819 10
Yukon Territory	475	111,138·65	110,655·38	1,813,883 46
Alberta	1	9·80	9·39	161 93
Alnska	4	157·91	153·98	2,660 44
	1,391	209,028·32	205,932·05	3,547,524 93

SESSIONAL PAPER No. 26a

CREDITS AND DISBURSEMENTS FOR THE PURCHASE OF GOLD BULLION.

Unexpended balance, "Letters of Credit," January 1, 1919	$ 346,708 25	
Credits established	3,250,000 00	
Balance written off at close of fiscal year, March 31, 1919	.....	$ 11,078 25
Disbursements	.....	3,547,524 93
Unexpended balance, "Letters of Credit," December 31, 1919	.....	38,105 07
	$3,596,708 25	$3,596,708 25

DISBURSEMENTS AND RECEIPTS FOR THE PURCHASE AND SALE OF GOLD BULLION.

Value of bullion on hand, January 1, 1919	$ 94,845 45	
Value of bullion shipped to Royal Mint, Ottawa, for which returns had not been received, January 1, 1919	111,643 54	
Disbursements for the purchase of bullion	3,547,521 93	
Receipts from bullion shipped to Royal Mint, Ottawa	.....	$3,153,396 94
Receipts from bullion sold for manufacturing purposes	.....	336,473 18
Difference in favour of this office on bullion shipped to Royal Mint, Ottawa	643 59	
Difference in favour of this office on bullion sold for manufacturing purposes	8,966 33	
Value of bullion shipped to Royal Mint, Ottawa, for which returns have not yet been received	.....	185,380 32
Value of bullion on hand, December 31, 1919	.....	88,373 40
	$3,763,623 84	$3,763,623 84

CONTINGENT ACCOUNT.

Unexpended balance, January 1, 1919	$ 65 60	
Funds provided	2,825 00	
Amount remitted Receiver General at close of fiscal year, March 31, 1919	.....	$ 50 79
Expenditure	.....	2,737 28
Unexpended balance, December 31, 1919	.....	102 53
	$2,890 60	$2,890 60

CONTINGENT EXPENDITURE.

Fuel (gas)	$ 715 12
Power	260 28
Express charges on bullion boxes (Ottawa to Vancouver)	65 98
Electric vault protection	320 00
Postage and telegrams	65 60
Telephones	88 00
Expressage, freight, etc., on supplies	75 30
Assayers' and melters' supplies (purchased locally)	887 76
Repairs to equipment	73 75
Sundries	185 49
	$2,737 28

PROCEEDS FROM SALE OF RESIDUES.

Residue recovered from slags, sweepings, etc	$765 35
33 empty acid bottles	3 96
	$769 31

RESIDUES ON HAND, DECEMBER 31, 1919.

Residue recovered from slags, sweepings, etc	$806 42
25 empty acid bottles.	

MISCELLANEOUS RECEIPTS.

Draft No. 612	For special assay		$ 2 00
" " 742	" refund of freight on 2 barrels fire brick.		14 38
" " 744	" special assay		2 00
" " 750	" 4 special assays		8 00
" " 780	" special assay		2 00
" " 834	" melting 25·22 ounces silver		1 50
" " 900	" special treatment of base bullion		18 00
" " 907	" special assay		2 00
" " 964	" " "		3 00
			$52 88

COMPARATIVE STATEMENT OF GOLD BULLION DEPOSITED DURING THE PAST TEN YEARS.

Calendar year 1910	$ 746,101 92
" " 1911	647,416 38
" " 1912	974,077 14
" " 1913	1,448,625 37
" " 1914	2,029,251 31
" " 1915	2,736,302 31
" " 1916	2,828,239 65
" " 1917	3,257,220 71
" " 1918	4,099,595 80
" " 1919	3,547,524 93

II.

PLATINUM.

The purchase of platinum at this office was discontinued on December 31, 1918; arrangements were made, however, to refine platinum and to assist the owners of same to market the refined product locally. The receipts in connexion with these transactions are as follows:—

REFINING AND MELTING.

Draft No. 702	2·00 oz	$10 00	
" " 757	6·88 "	15 00	
" " 759	4·00 "	10 00	
" " 763	1·04 "	10 00	
" " 792	2·55 "	10 00	
" " 826	1·86 "	10 00	
" " 869	8·90 "	15 00	
" " 869	0·73 "	10 00	
			$ 90 00

MELTING ONLY.

Draft No. 617	1·81 oz	$ 1 50	
" " 617	6·48 "	3 00	
" " 651	0·58 "	1 50	
" " 667	2·23 "	2 50	
" " 685	1·87 "	2 00	
" " 692	0·90 "	1 50	
" " 774	1·20 "	3 00	
" " 776	2·45 "	2 50	
" " 824	3·11 "	3 00	
" " 866	2·79 "	3 00	
" " 869	6·29 "	3 00	
" " 877	3·80 "	3 00	
			$ 35 50
" " 917	1·83 "	3 00	
" " 920	2·49 "	3 00	

ASSAY ONLY.

Draft No. 652	Special platinum assay	$ 3 00
		$128 50

SESSIONAL PAPER No. 26a

PLATINUM-BEARING ORES AND SANDS.

During the year 130 samples of ores and sands were assayed for platinum, details of which have been furnished from time to time on the form "Certificate of Assay." These assays were made free of charge.

The local expense account in connexion with this work and the refining and melting of platinum metals is subjoined:—

PLATINUM ORES ACCOUNT (INCLUDING THE ASSAYING OF PLATINUM-BEARING ORES AND SANDS AND THE REFINING AND MELTING OF PLATINUM.)

Unexpended balance, January 1, 1919	$ 17 80	
Funds provided	240 00	
Amount remitted Receiver General at close of fiscal year, March 31	.....	$ 0 37
Expenditure	.....	218 55
Unexpended balance, December 31, 1919	.....	38 88
	$257 80	$257 80

DETAILS OF EXPENDITURE SHOWN ON ABOVE STATEMENT.

Supplies	$152 15
Fuel	44 50
Power	19 00
Sundries	2 90
	$218 55

I am, Sir, your obedient servant,

G. MIDDLETON,
Manager.

G. Middleton, Esq.,
Manager, Dominion of Canada Assay Office,
Vancouver B.C.

Sir,—I beg to report the following assayers' supplies on hand, as on December 31, 1919, viz:—

Silver nitrate crystals	½ oz.
Lead foil, C.P.	10 lb.
" granulated, C.P.	½ "
Zinc, mossy, C.P.	2 "
Litharge	6 "
Acid, nitric	5 Winchesters.
" hydrochloric	½ Winchester.
" oxalic	2 lb.
Ammonia	¾ Winchester.
Small clay crucibles	96
Scorifiers, 2¼"	90
Cupels, all sizes	10,900
Bone ash	200 lb.
Muffles, spare	105
Mutlle furnace linings, spare	1
" supports, spare	20
" back stops, spare	30
" plugs, spare	4
" doors, spare	10
Gold cornets	12·24 oz.
Proof gold	23·76 "
Silver	275·00 "

Yours faithfully,

A. KAYE,
For Chief Assayer

DOMINION OF CANADA ASSAY OFFICE,
VANCOUVER, B.C., January 5, 1920.

G. MIDDLETON, Esq.,
Manager, Dominion of Canada Assay Office,
Vancouver, B.C.

SIR,—I beg to inform you that we had the following supplies on hand in the melting department on December 31, 1919, viz:—

6 sets of linings, with supports and covers complete, for No. 2 furnace.
3 sets of linings, with supports and covers complete, for No. 4½ furnace.
2 sets of linings, with supports and covers complete, for No. 7 furnace.
4 muffles for No. 15 "Case" gas muffle furnace.
8 graphite crucibles, No. 6.
6 graphite crucibles, No. 14.
3 graphite crucibles, No. 30.
3 graphite crucibles, No. 40.
2 graphite stirrers, No. OV12.
50 pounds borax.
75 pounds soda carb.
80 pounds sodium nitrate.

Yours faithfully,
D. ROBINSON,
Chief Melter.

LIST OF REPORTS, BULLETINS, ETC., PUBLISHED DURING THE YEAR 1919.

S. Groves, *Editor Department of Mines.*

337. Catalogue of Mines Branch Publications (Tenth Edition). Published December 19, 1919.
497. Production of Copper, Gold, Lead, Silver, Zinc, etc., during the calendar year 1917. Bulletin on—by John McLeish, B.A. Published January 30, 1919.
498. Production of Iron and Steel, during the calendar year 1917. Bulletin on—by John McLeish, B.A. Published February 10, 1919.
499. General Summary of the Mineral Production, during the calendar year 1917. Bulletin on—by John McLeish, B.A. Published February 10, 1919.
500. Production of Cement, Lime, Clay Products, and other Structural Materials, during the calendar year 1917. Bulletin on—by John McLeish, B.A. Published February 10, 1919.
501. Production of Coal and Coke, during the calendar year 1917. Bulletin on—by John McLeish, B.A. Published February 10, 1919.
502. Economic Use of Coal for Steam-Raising and House Heating. Bulletin No. 28—by John Blizard, B.Sc. Published July 23, 1919.
504. The Mineral Production of Canada, during the calendar year 1917. Annual Report on—by John McLeish, B.A. Published June 28, 1919.
506. The Mineral Production of Canada, during the calendar year 1918. Preliminary Report on—by John McLeish, B.A. Published March 12, 1919.
507. Potash Recovery at Cement Plants. Bulletin No. 29—by Dr. A. W. G. Wilson. Published August 14, 1919.
519. Smelter Treatment Rates. (Report of the Committee of Investigation in the Matter of Tolls charged by the Consolidated Mining and Smelting Co. of Canada, Limited, at Trail, B.C.) Bulletin No. 30. Published December 10, 1919.
527. Production of Copper, Gold, Lead, Nickel, Silver, Zinc, etc., during the calendar year 1918. Bulletin on—by John McLeish, B.A. Published December 19, 1919.
528. Production of Coal and Coke, during the calendar year 1918. Bulletin on—by John McLeish, B.A. Published December 24, 1919.

List of Mine Operators—

List of Coal Mine Operators in Canada.
List of Mines in Canada (other than Metal Mines, Coal Mines, Stone Quarries, Clay Plants, etc.).
List of Metal Mines in Canada.
List of Stone Quarries in Canada.
List of Cement Mills.
List of Sand and Gravel Deposits.
List of Petroleum and Natural Gas Wells.
List of Manufacturers of Clay Products.

FRENCH TRANSLATIONS.

Jobson Paradis, *Acting Chief of Publishing and Translation Division.*

494. Mines Branch Summary Report for 1917. Published May 19, 1919.
505. The Mineral Production of Canada, during calendar year 1917. Annual Report—by John McLeish, B.A. Published September 17, 1919.

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DONINION OF CANADA

ANNUAL REPORT

OF THE

DEPARTMENT OF INDIAN AFFAIRS

FOR THE

YEAR ENDED MARCH 31

1919

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

[No. 27—1920.]

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To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc., Governor General and Commander in Chief of the Dominion of Canada.

MAY IT PLEASE YOUR EXCELLENCY:

The undersigned has the honour to present to Your Excellency the Annual Report of the Department of Indian Affairs for the fiscal year ended March 31, 1919.

Respectfully submitted,

ARTHUR MEIGHEN,

Superintendent General of Indian Affairs.

OTTAWA, December 15, 1919.

PART I

REPORT

OF THE

DEPUTY SUPERINTENDENT GENERAL OF INDIAN AFFAIRS

FOR THE YEAR ENDED MARCH 31, 1919.

REPORT OF THE DEPUTY SUPERINTENDENT GENERAL.

OTTAWA, December 1, 1919.

Hon. ARTHUR MEIGHEN, K.C., B.A.,
Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the report of the Department of Indian Affairs for the year ended March 31, 1919.

POPULATION.

A quinquennial census is taken of the Indian population, the last census having been taken in 1917, prior to which a census was taken annually. The records of the department indicate that there is a slow but steady increase in the Indian population from year to year.

The following table shows the Indian population by provinces according to the census of 1917:—

Province—	Population.
Alberta	8,837
British Columbia	25,694
Manitoba	11,583
New Brunswick	1,846
Nova Scotia	2,031
Ontario	26,411
Prince Edward Island	292
Quebec	13,366
Saskatchewan	10,646
Northwest Territories	3,764
Yukon	1,528
Total, Indian population	105,998
Eskimos	3,296
Total, number of Indians and Eskimos	109,294

A more detailed statement giving statistics of the Indian population under the headings of religions, ages and sex in the various provinces and inspectorates will be found in Part II of this report.

THE VISIT OF HIS ROYAL HIGHNESS THE PRINCE OF WALES.

Several of the Indian bands were so fortunate as to have an opportunity of expressing their loyalty to His Royal Highness the Prince of Wales in person upon the occasion of his recent visit to the Dominion. An interesting and impressive function was held at Brantford, where His Royal Highness unveiled a bronze tablet inscribed with the names of eighty-eight members of the Six Nations Indians who had given their lives to the Empire in the great war. Upon this occasion His Royal Highness was made a chief by the Indian council under the name of "Chief Dayrohasereh," which signifies "dawn of the day."

The list was headed by the names of Lieutenant Cameron D. Brant, a descendant of Joseph Brant, the great Iroquois leader who assisted the British in 1776, and Lieutenant J. D. Moses, an Indian aviator, who died in a German prison camp as a result of injuries he received when he was brought down over the enemy lines.

His Royal Highness visited His Majesty's Chapel Royal of the Mohawks, an historic Iroquois church, and signed there the register which had also been signed by the late King Edward VII and the Duke of Connaught, and viewed the communion plate and Bible which were presented to the Six Nation Indians by Queen Anne. His Royal Highness planted a tree at the church in accordance with an ancient Iroquois custom, which is to be known as the "Prince's tree of Peace."

The Prince received a delegation of chiefs in native costume at Government House in Victoria, B.C., who presented him with an address expressive of their loyalty.

His Royal Highness was also made a chief by the Stony Indians at Banff. The Indians turned out in full ceremonial costume, and the occasion was one of the most successful and spectacular of its kind that had ever been held in the Dominion.

AGRICULTURE.

During the past two years the Department of Indian Affairs has shown great activity in opening up the reserves and developing their natural resources. In all the settled parts of the Dominion great care has been taken to encourage the Indians in agricultural pursuits and to afford them instruction in up-to-date methods of farming. The results of this policy are evidenced in larger and better crops on the great majority of the reserves.

In cases where reserves are too large to be cultivated by the number of Indians located on them, the surplus area is leased to whites for farming and grazing purposes, and in this manner extensive tracts that had hitherto lain idle are now being utilized.

ONTARIO.

The manner in which the department supervises the farming activities of the Ontario Indians by the employment of field agents who visit the various reserves and instruct the Indians in modern agricultural methods has been outlined in previous reports. The success of this policy is becoming more apparent each year, and notable progress is being made by the Indians of Ontario.

Ploughing Matches.—As a means of improving agriculture on Indian reserves, ploughing matches were organized at Deseronto, St. Regis, Moravian, Muncey, and Six Nations reserves. The first, second, and third prizes at each match included a trip to one of the large ploughing matches. Indians from the St. Regis and Deseronto reserves competed at the Ottawa match. The Muncey, Moravian, and Six Nations prize winners competed at the International match at Chatham. It is to the credit of the Indian competitors that they held their own with the white competitors. Several firsts were won by Indians at both the Chatham and Ottawa matches. The ploughing matches are instilling a pride in the Indian competitors that will be reflected in the ploughing on their own reserves.

Standing Crop Competition.—The standing crop competition has been extended this year, and now includes the Deseronto, St. Regis, Muncey, Saugeen, Sarnia, Moravian, Six Nations, Rice Lake, Alnwick, and Walpole Island reserves. The crop competition is a decided factor in the improvement of the crops raised by the Indians. From year to year marked improvement is noticed. Purer and better seed is planted and more care is being taken in the cultivation.

Agricultural Short Course.—Agricultural short courses have been held at the Muncey, Mount Elgin, and Shingwauk institutes. Practical courses in live stock, drainage, cultivation, fruit raising, and vegetable gardening were put on, and at the conclusion of each course examinations were written by the pupils. On the whole the answers were intelligent, showing a first-class knowledge of the subject.

School Fairs.—School fairs were organized at Muncey, Six Nations, Walpole Island and Deseronto. Pure seeds were supplied for these fairs, also pure bred-to-lay barred rock eggs. The fairs were a decided success. As a result the seed grain of the farmers has been improved and the poultry on the reserves is not only increased, but the strain is much improved.

Manitoulin Island and the North Shore.—This year an effort has been made to supply the Indians with better breeding stock and live stock improvement associations have been formed at Sheshegwaning, West Bay and Sucker Creek reserves. Shorthorn bulls have been obtained for these associations from the Live Stock Branch of the Dominion Department of Agriculture, and a Yorkshire boar has been applied for by the West Bay Association.

A competition was conducted in clover fields on the Wikwemikong reserve with a view to inducing the Indians to keep their clover fields free enough from weeds to enable them to thresh the clover for seed. Most of the fields inspected would be suitable for seed. At the West Bay reserve there was an oat competition, at the Sheshegwaning reserve a wheat competition, and at the Garden River reserve a potato competition.

Mustard spraying was conducted on the West Bay, Sheguiandah and Wikwemikong reserves. Meetings were held at which the Indians were given instruction with regard to eradication of weeds, especially mustard. At those meetings a moving picture was shown in order to give the Indians an idea how mustard might be sprayed on a large scale with a power spray outfit.

School fairs were again conducted for all the Indian schools on Manitoulin island in conjunction with the white schools in their vicinity and the Indian pupils again won a large share of the prize money. At Manitowaning school fair the pupils of three Indian schools were in competition with the pupils of three white schools and the Indians won about two-thirds of the prize money. At Garden River a school fair was organized for the two Indian schools.

Two home garden contests are held each year in this district for the pupils who have been identified with school fair work, but who have left school. They are supplied with a variety of seeds to plant a garden plot twenty feet by thirty. The first prize in East Manitoulin and the first prize in West Manitoulin were won by Indians in competition with white pupils.

Successful school gardens were conducted at the Spanish Industrial School and Shingwauk Home and some of the pupils of these schools had excellent plots in spite of the very unfavourable season.

There is a farmers' club and a womens' institute on the Sheshegwaning reserve, and a womens' institute on Sucker Creek reserve, which are doing good work in an educational way for the Indians of these reserves. A feature of the meetings of these societies is the showing of moving pictures demonstrating advanced agricultural methods.

PRAIRIE PROVINCES.

In view of the fact that only a small portion of land on the Indian reserves in the prairie provinces was under cultivation, and as these reserves are for the most part situate in the productive areas of the three provinces, it was considered necessary to take measures to have these idle lands brought under cultivation, and to organize the

staff of the Department of Indian Affairs in the said provinces in the most advantageous manner possible for the effective carrying out of such measures. Accordingly, on February 16, 1918, an Order in Council was passed appointing Mr. W. M. Graham, Inspector of Indian agencies for the South Saskatchewan inspectorate, as Commissioner for the Department of Indian Affairs in Manitoba, Saskatchewan and Alberta, with the following duties and powers:—

(*a*) To make proper arrangements with the Indians for the leasing of reserve lands, which may be needed for grazing, for cultivation, or for other purposes, and for the compensation to be paid therefor;

(*b*) To formulate a policy for each reserve;

(*c*) To issue directions and instructions to all inspectors, agents and employees in furtherance of that policy;

(*d*) To make purchases and engage or dismiss any extra or temporary employees, and market the yield of grain and live stock, and in effect to have the sole management of this work subject to the approval of the Superintendent General of Indian Affairs, to whom he shall report fully at close and regular intervals;

(*e*) To make recommendations to the Superintendent General of Indian Affairs, looking to the greater efficiency of such of the Indian service in the said provinces as is not related to the said special work.

The greater production work on the Indian reserves is subdivided into three distinct branches, as follows:—

1. The establishment and operation of Government Greater Production Farms.—Mr. Graham began to make arrangements for the establishment of these farms as soon as possible after his appointment, and the work was well under way early in the spring of 1918. Complete up-to-date equipment was secured at the most advantageous prices, and the necesary buildings, such as bunk-houses, cook-houses, stables, etc., were erected.

2. Farming by Individual Indians.—Every effort has been and is being made by the officers of the department, under the supervision of Mr. Graham, to stimulate, encourage and instruct the Indians in order that they may place larger areas under cultivation and materially increase their crops. This work has on the whole met with a great measure of success.

3. Farming and Grazing Leases.—As has been stated hereinabove. Mr. Graham was empowered by the Order in Council to make the necessary arrangements with the Indians for the leasing of reserve land to whites for farming and grazing purposes, in order to assist the greater production eampaign. Mr. Graham has been particularly energetic in exercising the powers thus conferred upon him, and a large number of leases were granted and the result was a very valuable increase in the national food supply.

The acreage sown on the five Greater Production Farms is as follows:—

	Wheat.	Oats.	Flax.	Total.
Assiniboine	725	80	.....	805
Crooked Lakes	2,005	229	.....	2,234
Muscowpetung	3,050	800	.....	3,850
Blackfoot	7,344	488	.....	7,832
Blood	3,930	630	150	4,710
Total	17,054	2,227	150	19,431

Unusual conditions prevailed in southern Alberta this year, and in fact there rarely has been in the history of that part of the country such an unfavourable season for growing crops.

In Saskatchewan conditions were more favourable. Wheat on the Muscowpetung farm averaged 16·39 bushels to the acre and oats 23·75 bushels per acre. At Broadview the results were not so good, owing entirely to rust which struck that section of the country late in July and early in August. The crop, however, compared favourably with others in that district.

The total yields on the Greater Production farms are as follows:—

	Bushels.
Wheat	140,000
Oats	37,500
Flax	400

These figures may vary a few hundred bushels either way, as they are based largely upon threshers' and bin measurements.

The wheat is all of the Marquis variety and a large proportion of it is grading No. 1 Northern. The oats are grown from pedigreed seed received through the Seed Grain Branch and will be sold in the country without difficulty, as there is a great demand for good seed. The growing of oats of this high grade means much to the country and the department has had requests, not only from the Seed Board, but from others, not to dispose of these oats outside the province, as there is a great need for pure-bred seed.

Seeding operations began early in April in Alberta, but the ground was almost parched and at times it was felt that it was really a waste of seed. However, in the Gleichen district what little rain there was certainly repaid the efforts that were made, as the average on the Blackfoot farm shows 5·17 bushels per acre in wheat and 20·49 bushels per acre in oats.

In Saskatchewan seeding began about the same time as in Alberta. There was more rain in this province, however, and at one time the stand of grain on the Department's farms indicated that there would be a yield of from 20 to 25 bushels per acre, but rust and lack of sufficient moisture prevented the results which would have been accomplished if conditions had been normal.

Great difficulty was experienced in securing help to carry on the operations during the past summer and fall. The labour market was very unsettled and it was with difficulty that the crops were harvested and threshed.

A great amount of preparatory work had to be done in an operation of this kind. In the matter of buildings it was necessary to erect 80 granaries and grain bins, 8 large stables, 3 permanent dwellings, and 4 dwellings, more or less of a temporary nature. Wells had to be sunk at the different points and equipped with pumping appliances. It was necessary to erect implement sheds and many miles of fencing at a cost of approximately $3,000.

In the face of such adverse climatic conditions the department can show a substantial profit from the operation for the period ended October 31, 1919.

In the matter of equipment, due allowance has been made for depreciation, which has been charged against the operation accounts. The approximate yields of grain shown have been compiled from conservative estimates made of grain threshed into granaries and bins, a large portion of which is still unmarketed for lack of cars. Up to the time of writing there has been marketed in all 62,382 bushels of wheat and we have on the reserves or in transit 77,618 bushels. The total estimated value of the wheat and oat crops is $321,500, and after liquidating all liabilities the estimated surplus earnings from the department's operations will be some $137,000.

With regard to the work of Greater Production on the reserves generally, it may be said that in Manitoba and the southern portions of Saskatchewan the Indians have had fairly good crops, in Manitoba in particular. In northern Saskatchewan there was little or no rain, and in consequence the crop suffered severely and what grain was cut was of a poor sample, added to which very unfavourable weather for threshing was experienced. In fact many of the people in that section of the province were unable to get their grain threshed at all.

In northern Alberta the Indians fared very well, while in southern Alberta the Blackfoot Indians were able to harvest five bushels per acre. This was exceptionally good considering the weather conditions, and the crop harvested was due entirely to good cultivation. In the three provinces the farming Indians summer-fallowed 9,891 acres, broke 4,873 acres, and fall-ploughed 2,486 acres of land. Owing to the unsatisfactory autumn weather very little autumn preparation of the land was done, which means that greater efforts will have to be made in the spring to get the crop into the ground. On the reserves this year the Indians had a total of 55,657 acres in crop, which is the largest acreage that was ever sown.

Mention may also be made of the lands on the reserves leased to white people for grain production purposes. The total area leased for this purpose is 16,374 acres, the bulk of which is in the province of Alberta. It is estimated that in the neighbourhood of 200,000 bushels of grain was produced on these lands.

In addition to this the department has leased to white settlers for grazing purposes 297,024 acres of Indian lands. This, together with the lands leased for farming purposes, has realized to date the sum of $144,343.95. This is practically a net profit for the Indians interested, for previous to the granting of the leases the revenue would not exceed $10,000 per annum.

BRITISH COLUMBIA.

Marked progress is being made by the Indians of British Columbia in agricultural pursuits, and great improvement is shown in the quantity and quality of their produce.

The Indians of British Columbia receive advice and instruction in the control of fruit and field pests, the control of weeds, pruning and grafting, general horticulture and agriculture, and stock-raising, especially the economic raising of pigs on rough lands.

MARITIME PROVINCES.

There is an annual parliamentary appropriation for Nova Scotia and also for New Brunwick for the purchase of seed grain, and the encouragement of agriculture among the Indians. Assistance is also given to individual farmers where required in Prince Edward Island.

QUEBEC.

The Indians living in agricultural districts in the province of Quebec are taking much greater interest in farming, especially in the Ristigouche, Pointe Bleue, St. Regis, Maniwaki and Oka agencies.

GENERAL.

The following table shows an increase in the land under crop, production and value of the products as compared with last year:—

Land under Crop, Production and Value of the Products.

Province.	Population.	Land under Crop.[1]	Grain.	Roots.	Hay.	Value of Farm Products including Hay.
		Acres.	Bushels.	Bushels.	Tons.	$
Alberta	8,837	19,210	120,189	8,543	35,396	397,673
British Columbia	25,694	12,196	150,774	351,088	23,160	638,305
Manitoba	11,583	8,978	129,445	39,392	15,869	268,797
New Brunswick	1,846	417	2,370	4,694	252	8,253
Nova Scotia	2,031	288	2,028	8,196	833	22,010
Ontario	26,411	21,797	450,373	124,443	41,269	960,091
P. E. Island	292	60	615	1,175	90	2,150
Quebec	13,366	5,569	72,151	57,181	4,623	219,048
Saskatchewan	10,646	23,453	425,144	15,416	45,567	625,719
Total, 1919[2]	100,706	91,968	1,353,089	610,128	167,059	3,142,046
Total, 1918	100,706	82,421	1,350,324	587,673	167,029	2,834,149
Increase		9,547	2,765	22,455	30	307,897

NOTE.—[1] Not including Hay Lands. [2] Does not include 5,292 Indians in Yukon and North West Territories.

THE INDIANS AND THE GREAT WAR.

In this year of peace the Indians of Canada may look with just pride upon the part played by them in the great war both at home and on the field of battle. They have well and nobly upheld the loyal traditions of their gallant ancestors who rendered invaluable service to the British cause in 1776 and in 1812, and have added thereto a heritage of deathless honour which is an example and an inspiration for their descendants. According to the official records of the department more than four thousand Indians enlisted for active service with the Canadian Expeditionary forces. This number represents approximately thirty-five per cent of the Indian male population of military age in the nine provinces, and it must be remembered, moreover, that there were undoubtedly cases of Indian enlistment which were not reported to the department. The Indian soldiers gave an excellent account of themselves at the front, and their officers have commended them most highly for their courage, intelligence, efficiency, stamina and discipline. In daring and intrepidity they were second to none and their performance is a ringing rebuttal to the familiar assertion that the red man has deteriorated. The fine record of the Indians in the great war appears in a peculiarly favourable light when it is remembered that their services were absolutely voluntary, as they were specially exempted from the operation of the Military Service Act, and that they were prepared to give their lives for their country without compulsion or even the fear of compulsion. It must also be borne in mind that a large part of the Indian population is located in remote and inaccessible locations, are unacquainted with the English language and were, therefore, not in a position to understand the character of the war, its cause or effect. It is, therefore, a remarkable fact that the percentage of enlistments among the Indians is fully equal to that among other sections of the community and indeed far above the average in a number of instances. As an inevitable result of the large enlistment among them and of their share in the thick of the fighting, the casualties among them were very heavy,

and the Indians in common with their fellow countrymen of the white race must mourn the loss of many of their most promising young men. The Indians are especially susceptible to tuberculosis, and many of their soldiers who escaped the shells and bullets of the enemy succumbed to this dreaded disease upon their return to Canada as a result of the hardships to which they were exposed at the front.

ONTARIO.

Ojibwa Bands.—The majority of the Indian bands in Ontario belong to the Ojibwa or Chippewa tribe, which is the largest subdivision of the great Algonkin linguistic stock. They are the descendants of the warriors who fought so valiantly in the war of 1812 under their great leader Tecumseh. The enlistment average during the late war was exceptionally high and many of their bands sent practically all their eligible members to the front.

Special mention must be made of the Ojibwa bands located in the vicinity of Fort William, which sent more than one hundred men overseas from a total adult male population of two hundred and eighty-two. Upon the introduction of the Military Service Act it was found that there were but two Indians of the first-class left at home on the Nipigon reserve, and but one on the Fort William reserve. In reference to the Nipigon Indians, it may be mentioned that in 1812 a war party from this reserve paddled the entire length of lake Superior and proceeded to Queenston Heights where it joined the forces of General Brock. The Indian recruits from this district for the most part enlisted with the 52nd, popularly known as the Bull Moose Battalion. Their commanding officer, the late Colonel Hay, who was killed, stated upon frequent occasions that the Indians were among his very best soldiers. Their gallantry is testified by the fact that the name of every Indian in this unit appeared in the casualty list. The fine appearance of these Indian soldiers was specially commented upon by the press in the various cities through which the battalion passed on its way to the front. One of the Indian members of the 52nd, Private Rod Cameron, won premier honours in a shooting competition among the best marksmen of twelve battalions. He rendered valuable service at the front as a scout and sniper and was subsequently killed in action.

Private Joseph Delaronde, another Nipigon Indian, of the 52nd Battalion, won the Military Medal for gallantry in action. His cousin, Denis Delaronde, who was killed in action, was the first man of the 52nd to enter the trenches of the enemy. Two other members of this fighting Indian family, Charles and Alexander Delaronde, also served with the 52nd. The latter was wounded, returned home, and discharged, re-enlisted and went back to the front. Another Nipigon Indian of the 52nd to be decorated was Sgt. Leo Bouchard, who was awarded the Distinguished Conduct Medal. Private Augustin Belanger, another Indian member of the 52nd Battalion, who was killed in action, was awarded the Military Medal. Alexander Chief, a Fort William Indian of the 52nd Battalion, returned to Canada after two years' service with no fewer than twelve wounds. Although he was an Indian of remarkably fine physique, he fell a victim to tuberculosis as a result of the hardships he endured and died in December, 1918. The Military Medal was posthumously awarded in the fall of 1917 to Corporal Thomas Godchere, of the 102nd Scottish, a British Columbia battalion, to which he was transferred from the 94th, the unit with which he enlisted at Port Arthur, of the Long Lake band, in the Thunder Bay district, in recognition of his gallant conduct at Vimy Ridge.

The Chippewas of Rama sent thirty-eight men to the front from a total adult male population of 110. The Military Medal was awarded to one of their number, Private Ben Simcoe, for gallant conduct in action. This Indian is the great-grandson of John Simcoe, whose Indian name was Windego, a Sawnee brave who

served with Tecumseh in 1812. Windego fought at Detroit, Queenston Heights, and Moraviantown, and upon the conclusion of the war was awarded the British Medal. He afterwards served with the Loyalist forces in the rebellion of 1837.

Among the Mississaguas of Rice Lake, forty-three enlisted from a total male population of eighty-two. One of their number, Lance-Corporal Johnson Paudash, of the 21st Battalion, received the Military Medal for his distinguished gallantry in saving life under heavy fire and for giving a warning that the enemy were preparing a counter attack at Hill Seventy; the counter attack took place twenty-five minutes after Paudash gave the information. It is said that a serious reverse was averted as a result of his action. He enlisted in August, 1914. Like many others of the Indian soldiers, he has a splendid record as a sniper, and is officially credited with having destroyed no less than eighty-eight of the enemy. Upon the introduction of the Military Service Act it was found that not a single man of the class called remained at home among the Chippewas of Nawash, located at Cape Croker. Thirty-one Mississaguas of Alnwick enlisted from a total adult male population of sixty-four. One of their number, Sampson Comego, won distinction as a sniper, having destroyed twenty-eight of the enemy. He enlisted in the fall of 1914, and was killed in November, 1915. Peter Comego, brother of Sampson Comego, also enlisted in 1914, served in the trenches, and was twice wounded. He also distinguished himself as a sniper.

The Indian bands located on Manitoulin island, on the northern shore of lake Huron, sent about fifty men to the front. One of their number, Frank J. Sinclair, received the Military Medal, and another, Francis Misiniskotewe, was awarded the Russian Medal.

Another Indian member of the 52nd Battalion to be decorated was Dave Kisek. He is said to have been the tallest man in the regiment. He came through the war without being wounded, although two bullets went through his tunic. During the heavy fighting around Cambrai he unstrapped a machine gun from his shoulder and advanced about 100 yards to the German position, where he ran along the top of their trench, doing deadly execution with his machine gun. He single-handed took thirty prisoners upon this occasion. This Indian came from the remote regions of the Patricia district.

About twenty Indians enlisted from the Parry Sound district. One of their number, Corporal Francis Pegahmagabow, won the Military Medal and two Bars. He enlisted in 1914 with the original 1st Battalion. He distinguished himself signally as a sniper and bears the extraordinary record of having killed 378 of the enemy. His Military Medal and two Bars were awarded for his distinguished conduct at Mount Sorrell, Amiens, and Passchendaele. At Passchendaele, Corporal Pegahmagabow led his company through an engagement with a single casualty, and subsequently captured 300 Germans at Mount Sorrell. Corporal Pegahmagabow presented an address on behalf of his people to His Royal Highness the Prince of Wales upon the recent visit of the latter to Parry Sound.

Forty-two Moravians of the Thames went to the front from a total adult male population of seventy-nine. One of their number who won fame as a sniper, Private George Stonefish, of Moraviantown, was tendered a civil reception by the city of Chatham on his return to Canada in recognition of his exceptional services. Another of their number, Corporal Robert Tobias, also was awarded the Military Medal. He is the son of ex-Chief Walter Tobias, who was killed at Ypres. Two other sons of ex-Chief Tobias also served with the expeditionary forces. One of the Moravian Indian soldiers, Private Roy Snake, enlisted at the age of sixteen with a forestry unit. He was afterwards transferred to the infantry and participated in the battle of Cambrai.

Among the other Ojibwa bands in Ontario that have notable enlistment records are the Chippewas of Saugeen, who sent forty-eight from a total adult male population

of one hundred and ten; the Chippewas of Georgina and Snake Islands, who sent eleven from a total adult male population of twenty-three; the Chippewas of the Thames, who sent twenty-five from a total adult male population of one hundred and ten; the Chippewas and Pottawatomies of Walpole Island, who sent seventy-one to the front from a total adult male population of two hundred and ten; the band located at Sturgeon Falls, which sent thirty-five from a total adult male population of one hundred and three; the bands in the Chapleau district, which sent forty from a total adult male population of one hundred and one; the Mississaguas of the Credit, located near Hagersville, who sent thirty-two from a total adult male population of eighty-six, and the Munsees of the Thames, who sent eleven from a total adult male population of thirty-eight.

Special mention must be made of the remarkable response to the call to arms among the Mississaguas of Scugog. This little band has only thirty of a population, and when the war broke out but eight of these were adult males. These eight men all enlisted without exception, thereby establishing what is probably an enlistment record unequalled in the annals of the great war. Another outstanding case is that of the Algonkins of Golden Lake, who sent twenty-nine soldiers to the front, leaving only three men on the reserve.

IROQUOIS BANDS.

There are a number of populous Iroquois bands in Ontario, and these also like those of the Ojibwa race have a proud record in the great war. They are the descendants of the loyal Mohawks, Senecas, Onondagas, Cayugas, Oneidas and Tusearoras, who came to Canada from the state of New York in 1775 under the leadership of Captain Joseph Brant Tyendinaga, the great Mohawk chieftain whose name is perpetuated in those of the city of Brantford and the county of Brant. The largest band of Iroquois is the Six Nations of Brantford. This band sent two hundred and ninety-two warriors to the front, of whom twenty-nine were killed in action, five died from sickness, one is missing, fifty-five were wounded, and one was taken prisoner of war. Those of their number who were decorated were Captain A. G. E. Smith, who was awarded the Military Cross; Ignace Williams, who was awarded the Military Medal, and Austin Horse, who was awarded the Military Medal. Captain A. G. E. Smith is the son of a Six Nations chief. He went overseas with the 20th Battalion and was three times wounded. Upon his return to Canada he was made adjutant of a Polish battalion at Camp Niagara.

The great majority of these Six Nations soldiers enlisted with the 114th Battalion, which was organized in the fall of 1915, under the command of Colonel E. S. Baxter, of Cayuga, then commanding officer of the Haldimand Rifles, a well known militia battalion. Colonel Baxter died in 1916 and was succeeded by Lieut.-Colonel Andrew T. Thompson of Ottawa. Colonel Thompson had also for some years commanded the Haldimand Rifles, the left half of which was made up of Six Nations Indians. Colonel Thompson is an honorary chief of the Six Nations Indians and his position at the head of the battalion did much to stimulate recruiting among the Indians. Many Indians from other bands also joined this unit, among whom were a large number from the Caughnawaga and St. Regis bands, in the province of Quebec, which also belong to the Iroquois race. Two entire Indian companies were formed in the 114th Battalion, and the majority of the officers of these companies were also Indians. In recognition of the fact that among its Indian members were many who were descendants of warriors who fought at the battle of Queenston Heights under General Brock, the battalion received the name of Brock's Rangers, and the device of two tomahawks became part of the regimental crest. A singularly beautiful regimental flag was worked for the Rangers by the Six Nations Women's Patriotic League. This is adorned with figures symbolic of various tribal legends and has been the subject of much comment and admiration. The 114th regimental band, com-

posed almost entirely of Indians, toured the British Isles for recruiting and patriotic purposes. Three Indian officers of this battalion, Captain J. R. Stacey of Caughnawaga, and Lieutenants Moses and Martin, of Ohsweken, were transferred to the Royal Flying Corps. Captain Stacey was killed in an accident and Lieutenant Moses was among the missing. Through a strange coincidence the first man from Brant county to be killed in action in the great war was Lieutenant Cameron D. Brant, a great-great-grandson of the famous Captain Joseph Brant. Lieutenant Brant enlisted with the 4th Battalion and was killed at the second battle of Ypres while gallantly leading his men against the trenches of the enemy. Two of the lineal descendants of Captain Joseph Brant, Corporal Albert W. L. Crain and Private Nathan Montour received severe wounds at the battle of Ypres. The present head of a distinguished old Iroquois clan or family, the Bearfoot Onondagas, is Mrs. Elijah Lickers. Four of her sons, two grandsons, and a son-in-law served with the expeditionary forces, of whom a son and grandson were killed in the field. One member of this family, who served with the original 48th Highlanders of Toronto, was taken prisoner in April, 1915, and was kept in Germany until the end of the war. Another Six Nations woman, Mrs. Catherine General, had a husband, four sons, and two sons-in-law with the overseas forces.

The other Iroquois bands in Ontario are the Mohawks of the Bay of Quinte, and the Oneidas of the Thames; both these bands have an exceptionally high enlistment record. Eighty-two Mohawks of the Bay of Quinte enlisted from a total adult male population of three hundred and fifty-three, and forty-eight Oneidas of the Thames enlisted from a total adult male population of two hundred and twenty. The Military Medal was awarded to one of the soldiers of the Bay of Quinte named Corby.

QUEBEC.

The Indians of Quebec were well represented in the expeditionary forces. The historic Iroquois village of Caughnawaga, near Montreal, sent forty-three men to the front with the 114th Battalion, Brock's Rangers, which, as has been mentioned in connection with the Indians of Ontario, contained two full battalions of Indians. One of their number, Captain John R. Stacey, was transferred to the Royal Flying Corps, after his arrival in England, and was subsequently killed in an accident. The famous Colonel Bishop, V.C., the great Canadian ace, stated that Captain Stacey was a flier of exceptional promise. He had been selected by Colonel Bishop to be a member of one of the latter's famous "fighting circle," but the accident which caused his death occurred before he was able to take his place in that renowned organization. In civilian life Captain Stacey was a successful customs broker in Toronto. He was untiring in his efforts to stimulate enlistment among the Iroquois both by able recruiting work and financial assistance. Captain Stacey went overseas as a lieutenant, but was soon promoted as a result of his exceptional abilities.

Sergeant Clear Sky, another Caughnawaga Indian of the 114th Battalion, was awarded the Military Medal for one of the most gallant and unselfish deeds that is recorded in the annals of the Canadian forces. During a heavy gas attack Sergeant Clear Sky noticed a wounded man lying in "no man's land" whose gas mask had been rendered useless. Clear Sky crawled to him through the poisonous fumes, removed his own mask, and placed it on the wounded man, whose life was in consequence saved. Sergeant Clear Sky was himself severely gassed as a result of his heroic action. He is a graduate of the well known Carlyle Indian University, and prior to his enlistment was a professional vaudeville entertainer. He was very popular at the front owing to his ability to entertain the troops with his singing and dancing.

The excellent record of the Caughnawaga Indians in this war is reminiscent of their loyalty upon former occasions. During the rebellion of 1837-38 these Indians rendered important service to the Government. On Sunday, November 4, 1838, a body

of rebels attempted a surprise attack upon the village of Caughnawaga. A squaw warned the Indians, who were attending divine service at the time. They quickly and signally defeated the insurgents and made seventy prisoners, who were handed over to the authorities upon the following day. Their gallant conduct upon this occasion was specially mentioned in a despatch from Lord Glenelg to Sir John Colborne.

The St. Regis band of Iroquois sent twenty-six of their warriors to the front. One of their number, Private Philip McDonald, won exceptional distinction as a sniper. He enlisted in August, 1914, and served with the 8th Battalion, more particularly known as the Little Black Devils of Winnipeg. He was killed in action after having destroyed forty of the enemy by his deadly sharpshooting.

Delphis Theberge was awarded the Military Cross in recognition of his gallant conduct during the attack on the Canal du Nord.

Private Willie Cleary, a Montagnais Indian of Lake St. John, who served with the illustrious 22nd Battalion, was decorated with the Military Medal by His Royal Highness the Prince of Wales at Lafontaine Park, Montreal, on October 28, 1918, for conspicuous gallantry in an important trench raid. He was severely wounded.

Another Indian member of the 22nd Battalion, Private Joseph Rousain, of Oka, was awarded the Military Medal.

MARITIME PROVINCES.

All the Indians of the Maritime Provinces belong to the Micmac tribe, which is a subdivision of the Algonkin linguistic stock, with the exception of the Malisects of New Brunswick, who form a separate branch of the Algonkin race.

The Nova Scotia reserves are not very thickly populated, and in consequence the number of recruits secured upon them was numerically small. In a number of instances, however, the enlistment record in proportion to the population was very high, for example, from among the Micmacs of Sydney every eligible man went to the front. The Micmacs of Colchester county sent nine men from a total adult male population of twenty-five; the Micmacs of Hants county sent six from a total adult male population of sixteen; the Micmacs of Lunenburg county sent eleven from a total adult male population of nineteen; the Micmacs of Pictou county sent ten from a total adult male population of forty; the Micmacs of Shelburne county sent three from a total adult male population of eight; the Micmacs of Yarmouth county sent three from a total adult male population of twelve, and the Micmacs of Digby county sent six from a total adult male population of twenty-four. One of these Nova Scotia Indians, Private Joseph W. Morris, was awarded the Distinguished Conduct Medal and the Military Medal. He was three times wounded.

From among the Micmacs and Maliseets of New Brunswick, sixty-two went to the front out of a total adult male population of one hundred and sixteen.

The Micmacs of Prince Edward Island have an exceptionally fine enlistment record. The total number of adult males among these Indians was sixty-four, of whom thirty went to the front, or practically every eligible man. They earned the highest praise for their exceptionally gallant conduct in action, and particularly distinguished themselves in the great battle of Amiens. One of their number, Private James Francis, received the Military Medal. A curious incident is recorded with regard to two Micmac brothers named Cope, from Kings county, Nova Scotia. These two young Micmacs enlisted in different battalions, and did not see each other until they met quite by chance in the thick of the fighting at Vimy Ridge. They were so begrimed as a result of the hard day's fighting that they had at first failed to recognize each other. The elder of these boys was afterwards killed at Passchendaele, but the younger came through the war safely and proceeded with the army of occupation into Germany.

MANITOBA.

Some of the Manitoba bands have an excellent enlistment record. Notable among these is the Peguis band, which sent twenty men to the front from a total adult male

population of one hundred and eighteen, eleven of whom were killed in action, four wounded and gassed, three wounded, and one taken prisoner. Two of these Indians were with the Serbian forces. The Pas band sent nineteen men to the front from a total adult male population of ninety-two. The St. Peter's band sent thirty-three men to the front from a total adult male population of one hundred and twenty-seven, seven of whom were killed in action, eight wounded, and one gassed. The Sioux Indians located at Griswold sent twenty men to the front from a total population of eighty-four. They are descendants of refugees who came to Canada half a century ago, after the famous wars betwen the Sioux Indians and the American Government.

SASKATCHEWAN.

In previous reports reference has been made to the model agricultural community at File Hills, which is composed of ex-pupils of Indian schools, and which was organized by the department some sixteen years ago. As a result of this experiment these progressive young Indians are now on a wholly self-supporting basis and are ranked among the most competent farmers of the province. They fully appreciate the advantages that have been brought to them by civilization and were ready at the critical time to defend them against the menace of a foreign enemy. Twenty-four of their number enlisted from a total adult male population of thirty-eight, and this remarkably high percentage is emphazised by the fact that the majority of them were married men. One of these Indians, Alexander Brass, was awarded the Military Cross for conspicuous gallantry in action. He is the bandmaster of the File Hills Indian Colony brass band, a well known organization which rendered excellent assistance at recruiting meetings and other patriotic gatherings throughout the province.

The Coté band, whose reserve is located in the vicinity of old Fort Pelly, one of the earliest Hudson Bay posts established in the province, sent twenty-two men to the front from a total adult male population of forty-three.

One of the Saskatchewan Indian soldiers, Joe Thunder, of the 128th Battalion was awarded the Military Medal for a feat of arms of an exceptionally dramatic character. He was separated from his platoon and surrounded by six Germans, each of whom he bayoneted. He received a severe wound in March, 1918, and now wears a scarf pin made from a bone that was removed from his leg as a result of this wound.

Two Indians of the Mistawasis band, Joe Dreaver and N. G. Sanderson, were awarded the Military Medal.

ALBERTA.

That the present generation of Alberta Indians had not lost the intrepid spirit of their ancestors, the warlike riders of the plains and hunters of the buffalo, is demonstrated by the fact that they were well and gallantly represented in the Canadian Expeditionary Force.

One of their number, Albert Mountain Horse, a Blood Indian, who held a commission as lieutenant, and who enlisted as a private in August, 1914, particularly distinguished himself. He was badly gassed upon three different occasions as a result of which he afterwards contracted consumption and died in November, 1915. The military funeral that was held for him at Calgary will long be remembered as one of the most impressive ceremonies that ever took place in that city. So many desired to attend the service that it was necessary to issue tickets of admission to the church.

Another Alberta Indian who won fame at the front was Lance-Corporal Norwest, who came from the vicinity of Edmonton and enlisted with the 50th Battalion of Calgary. He was one of the foremost snipers in the British army and was officially credited with one hundred and fifteen observed hits. He carried a special rifle fitted with a telescopic sight. He was killed by a German sniper in August, 1918, while

endeavouring with two companions to locate a nest of enemy sharpshooters who had been causing a considerable amount of trouble to the advance posts of the Canadian front line companies. He won the Military Medal and Bar.

BRITISH COLUMBIA.

The British Columbia Indians are somewhat less warlike in character than those of the plains and in the eastern provinces, and are by nature adverse to leaving their homes upon any unfamiliar venture. They nevertheless sent several hundred good soldiers to the front, and a number of them have very distinguished records.

Although the Military Service Act did not apply to the Indians, a record of those enlistments was compiled upon the introduction of the measure. It was found that among the Indians of the Head of the Lake band in the Okanagan district every man who came within the description of the first call had already enlisted. This is a record of which any community might well be proud. One of these Indians, Private George McLean, received the Distinguished Conduct Medal in recognition of the performance of a feat which was of an extraordinary character even for the great war. Private McLean single-handed destroyed nineteen of the enemy with bombs and captured fourteen. He was himself severely wounded upon this occasion.

A number of the British Columbia Indians served with the Mesopotamian forces. One of these, David Bernardan, of the Oweekayno band, in the Bella Coola agency, commanded a motor transport vessel on the Euphrates river. An Alert Bay Indian, Edwin Victor Cook, received the Distinguished Conduct Medal. He was wounded twice, and was finally killed towards the end of the war. Dan Pearson, an Indian of the Metlakatla band, which is located near Prince Rupert, was awarded the Military Medal. He afterwards died of pneumonia.

PATRIOTIC AND OTHER WAR FUNDS.

From the outset of the war the Indians, both as bands and as individuals, have been very generous in proportion to the means at their disposal in contributing to the Patriotic, Red Cross, Belgian Relief, and other war funds, their donations in all making a total of $44,545.46. In addition to this amount, sums totalling $8,750, were offered, but as the bands in question were not in a position to make the outlay, the department could not sanction the expenditure. The following list shows by provinces the contributions of the Indians to the various war funds:—

ONTARIO.

Contributions to the Patriotic Fund, Ottawa.

Chippewas of Beausoleil on Christian Island	$ 100 00
Cockburn Island	200 00
Sucker Creek	500 00
Sheguiandah	500 00
Manitoulin Island	500 00
Chippewas of Sarnia	200 00
Sheshegwaning Band	500 00
Chippewas of Saugeen	500 00
West Bay Band	500 00
Rice Lake Band	100 00
Georgina Island Band	50 00
South Bay Band	200 00
Dokis	1,000 00
Nipissing	500 00
Moravian Band of the Thames	200 00
Chippewas of Walpole Island	100 00
Henvey Inlet	100 00
Pottawattamie Band, Walpole Island	25 00
Indians of Kenora and Savanne Agencies during Treaty payments (and a few whites)	344 15

PATRIOTIC AND OTHER WAR FUNDS.—*Continued.*

ONTARIO.—*Con.*

Kenora and Savanne Agencies	212 65
Chief J. Ackewance, members of his and Frenchmen's Head Bands and two halfbreeds at Lac Seul	89 75
Four Indians, Lac Seul Band	6 00
Sheshegwaning Band, Manitoulin Island	500 00
Total	$ 6,927 55

Contributions to Red Cross Fund, Ottawa.

Ainwick	$ 100 00
Sucker Creek School	50 00
Sucker Creek Indians, proceeds of Maple Taffy Social	47 00
Shawanaga Band	200 00
Christian Island	300 00
	$ 697 00

Contributions to Local Patriotic, Red Cross and other War Funds.

Garden River Indians, Algoma War Chest Fund	$ 200 00
Itama, Orillia Patriotic Fund	50 00
Georgina Island, Canadian Patriotic Fund	25 00
Parry Island Indians, 23rd Regiment Overseas Contingent Fund	100 00
Wikwemikong Indians, Patriotic Fund	201 70
Cape Croker, Patriotic Fund, County of Bruce	200 00
Sucker Creek, Patriotic Fund	84 00
Mississaguas of the Credit, Battalion Funds, 114th Battalion	200 00
Saugeen Reserve, Girls' Overseas Comfort Club, Southampton	400 00
Six Nations, Women's Patriotic League	50 00
Lac Seul and Frenchmen's Head, Kenora Patriotic Fund	51 00
Lac Seul, Frenchmen's Head, Islington and Grassy Narrows, Kenora and Savanne Agencies, Kenora Patriotic Fund	268 75
Caradoc Reserve, Women's organization "Friends of Soldiers," collection; comforts for soldiers	400 00
Enoch Tomigo, Red Cross and boxes for soldiers	60 00
Oneida Reserve, Oneida Patriotic League, raised by subscription, booths at fairs, etc.; expended on boxes for soldiers	468 70
	$ 2,759 15

RECAPITULATION.

Ontario.

Contributions to the Canadian Patriotic Fund, Ottawa	$ 6,927 55
Contributions to the Red Cross Funds, Ottawa	697 00
Contributions to the Local Patriotic, Red Cross and other War Funds	2,759 15
	$10,383 70

QUEBEC.

Contributions to Canadian Patriotic Fund, Ottawa.

Abenakis of Pierreville	$ 50 00

Contributions to Red Cross Funds, Ottawa.

Maurice Bastien (personally)	$ 25 00

Contributions to Belgian Relief.

Montagnais Children, Pointe Bleue Reserve	$ 5 00

Local Patriotic and other War Funds.

Joseph Bastien, Lorette, Red Cross	$100 00

PATRIOTIC AND OTHER WAR FUNDS.—*Continued.*

RECAPITULATION.

Quebec.

Contributions to Canadian Patriotic Fund, Ottawa	$ 50 00
Contributions to Red Cross Funds, Ottawa	25 00
Contributions to Belgian Relief	5 00
Contributions to Local Patriotic, Red Cross and other War Funds	100 00
	$180 00

MANITOBA.

Contributions to Canadian Patriotic Fund, Ottawa.

Sioux Indians, Oak River	$ 101 00
Indians of Roseau River	9 60
Oak River Indians	51 00
Peguis Band (capital funds)	650 00
	$811 60

Contributions to Red Cross Fund, Ottawa.

Norway House Indians	$ 318 00
Pipestone Indians	50 00
Peguis Band (capital funds)	650 00
Oak River Indians	11 50
	$1,029 50

Contributions to Local Patriotic, Red Cross and other War Funds.

Pas agency, several bands, Red Cross, The Pas	$ 298 50
Pas Band, The Pas Red Cross	300 00
Nelson House, Lake Winnipeg, Local Red Cross	300 00
Birtle Agency—	
Birdtail Sioux, Patriotic Fund	132 00
Rolling River, Red Cross	75 00
Portage la Prairie—	
Sioux Village Indians, Red Cross	33 00
Portage la Prairie School Children, Red Cross	40 00
	$1,178 50

RECAPITULATION.

Manitoba.

Contributions to Canadian Patriotic Fund, Ottawa	$ 811 60
" Red Cross Fund, Ottawa	1,029 50
" Local Patriotic, Red Cross and other War Funds	1,178 50
	$3,019 60

SASKATCHEWAN.

Contributions to Canadian Patriotic Fund, Ottawa.

Battleford	$ 20 20
Muscowpetung	500 00
"	500 00
Carry-the-Kettle Patriotic Association, Assiniboine River	164 00
" " " " " "	120 95
" " " " " "	117 95
Onion Lake Agency, Sask	74 80
" " " " Onion Lake, Island Lake and Jos. Bighead's	58 65
" " " "	25 70
James Smith's Band No. 100, Duck Lake Agency	100 00
Moosomin Band, Battleford Agency	35 00
Onion Lake Band and one Indian, Ministikwan Band	7 45
Indians of Assiniboine Agency	78 25
Frog Lake Band, Onion Lake Agency	27 25
Onion Lake Indians	25 50
Frog Lake Band, under Chief Napayo, Onion Lake Agency	15 00

PATRIOTIC AND OTHER WAR FUNDS.—*Continued.*

SASKATCHEWAN.—*Con.*

Councillor Saulteaux, Carry-the-Kettle Band, Assiniboine Reserve	10 00
Indians of File Hills Colony	502 10
White Bear Band	1,000 00
Sturgeon Lake Band	100 00
Thunderchild's Band	200 00
Councillor Saulteaux, Carry-the-Kettle Band, Assiniboine Reserve	20 50
Stony, Red Pheasant, Moosomin and other Indians	156 20
Beardy and Okemasis Bands, Duck Lake Agency	100 00
Moochenins, Indian, Onion Lake Agency	1 50
Pasquah	1,000 00
	$ 4,961 00

Contributions to Red Cross Fund, Ottawa

Thunderchild's Band	$ 100 00
Battleford Indians	119 00
School children, John Smith's Reserve	7 35
James Smith's Band	30 00
Battleford Indians	20 20
Mrs. Chatelaine, Meadow Lake Reserve, proceeds of entertainment	20 00
Sioux Indians, Prince Albert, per Mr. Henry Two Bears	15 00
" " " "	15 00
	$ 326 55

Contributions to Local Patriotic, Red Cross and other War Funds.

Assiniboine Agency, Red Cross		$ 670 00
" " Patriotic Fund		103 35
Moose Mountain Agency, Red Cross and Patriotic Funds		1,390 00
File Hills Agency—		
Canadian Patriotic Fund	$1,625 90	
Canadian Red Cross	5,800 00	
Serbian Relief	100 00	
Belgian Relief	334 00	
French Red Cross	75 00	
Prisoners of war	75 00	
Other patriotic purposes	50 00	
		8,059 90
Qu'Appelle Agency—		
Daughters of the Empire and Canadian Patriotic Fund	$ 250 00	
Local Red Cross and Patriotic Societies	500 00	
Red Cross	500 00	
		1,250 00
Touchwood Agency—		
1916	$ 114 00	
1917	227 25	
1918	195 00	
		536 25
Children of George Gordon's School—		
Local Patriotic Fund	$ 15 00	
Tobacco Fund	11 25	
		26 25
		$11,945 75

Belgian Relief.

Children of Gordon's School	$ 24 60

RECAPITULATION.

	$ 24 60

Saskatchewan.

Contributions to Patriotic Fund, Ottawa	$ 4,961 00
" Red Cross Fund, Ottawa	326 55
" Belgian Relief	24 60
" Local Red Cross, Patriotic and other War Funds	11,945 75
	$17,257 90

PATRIOTIC AND OTHER WAR FUNDS.—*Continued.*

ALBERTA.

Contributions to Canadian Patriotic Fund, Ottawa.

Blood Indians		$ 458 00
Samson's Band		1,000 00
Blackfoot		1,200 00
Whitefish Lake (Indians and whites)		7 50
Blackfoot		100 00
Hobbema Indians		41 15
Blackfoot Indians		200 00
Jas. Seenum's Band, Whitefish Lake Reserve, Saddle Lake Agency		50 00
Saddle Lake No. 125		14 50
Saddle Lake No. 125	$61 25	
Beaver Lake Band No. 131	11 25	
		72 50
		$3,143 65

Contributions to Red Cross Fund, Ottawa.

Blackfoot Indians		$ 34 10
" "		100 00
Indians of Hobbema Reserve		96 00
		$ 230 10

Contributions to Belgian Relief.

Enoch's (to Belgian Relief, Montreal)	$ 300 00
Enoch's	200 00
Whitefish Lake (Indians and whites)	7 50
	$ 507 50

Contributions to Local Patriotic, Red Cross and other War Funds.

Stony Indians, Cochrane Patriotic Fund	$ 50 00
" " 12 cords wood to Patriotic Fund	39 00
" " 15 cords wood to Associated Charities, Calgary.	48 75
Alexander's Band, Edmonton Agency, Red Cross	50 00
Paul's Band, Edmonton Agency, Red Cross	50 00
Blackfoot Band, to Gleichen Patriotic Fund	207 00
" " to Gleichen Red Cross	1,154 00
" " " "	56 00
" " " "	61 80
" " Red Cross and Patriotic	1,082 10
Duncan Clark, Blackfoot Indian, donation to Gleichen Red Cross	5 00
Blood Indians, Local Branch Red Cross	440 00
" " Red Cross and Patriotic Funds	1,532 00
	$4,775 65

RECAPITULATION.

Alberta.

Contributions to Canadian Patriotic Fund, Ottawa	$3,143 65
" Red Cross Fund, Ottawa	230 10
" Belgian Relief	507 50
" Local Patriotic, Red Cross and other War Funds	4,775 65
	$8,656 90

BRITISH COLUMBIA.

Contributions to Canadian Patriotic Fund, Ottawa.

Metlakatla	$ 50 00	
Stuart Lake Indians	24 80	
Campbell River Band	100 00	
Cape Mudge Band	55 56	
Homalco Indians	16 75	
Bella Bella Indians	200 00	
		$ 447 11

PATRIOTIC AND OTHER WAR FUNDS—*Concluded.*

Contributions to Red Cross Funds, Ottawa.

Bella Bella Indians	$200 00	
Stuart Lake Indians	62 75	
" " "	96 50	
		359 25

Contributions to Local Patriotic, Red Cross and other War Funds.

New Westminster, various Local Funds		$ 400 00
Squamish Indians, British Columbia Patriotic Fund		300 00
" " " " " "		41 25
Massett and Skidegate Indians, War Funds Skidegate District		150 00
Metlakatla Indians, Prince Rupert Red Cross		1,000 00
" " Local Patriotic Fund		90 00
Stuart Lake Indians, Local Patriotic Fund		278 00
Bella Coola Agency, Red Cross		600 00
West Coast Agency, Local Patriotic Fund		51 65
" " "		465 55
" " various funds		413 55
Babine Agency—		
Local Patriotic	$247 00	
Red Cross	204 00	
		451 00
		$4,241 00

RECAPITULATION.

British Columbia.

Contributions to Canadian Patriotic Fund, Ottawa	$ 447 11
" Red Cross Fund, Ottawa	359 25
" Local Patriotic, Red Cross and other War Funds	4,241 00
	$5,047 36

GRAND TOTAL.

Ontario	$10,383 70
Quebec	180 00
Manitoba	3,019 60
Saskatchewan	17,257 90
Alberta	8,656 90
British Columbia	5,047 36
	$44,545 46

Special attention should be drawn to the amount of $8,562 subscribed to the various funds by the Indians of File Hills, Sask., an especially good showing when it is considered that their population is about 362. The munificence of their contribution in proportion to their numbers is a pleasing commentary upon the success of the measures taken by the Government for their advancement. The patriotic spirit of these Indians was evidenced from the outset of the war, and as early as 1914 each man in the colony pledged himself to give the value of 50 bushels of oats and a number of the older Indians contributed a load of wood apiece each month, a procedure which was also followed by the Stony Indians in Alberta.

RED CROSS WORK.

The Indian women on many of the reserves formed Red Cross societies and Patriotic leagues. These organizations corresponded to similar societies in white communities. They carried on their work with energy and efficiency and were successful in the accomplishment of excellent results. They made bandages and provided various

comforts for the soldiers, knitted socks, sweaters and mufflers, and also raised money for patriotic purposes by holding card parties, bazaars, and other social entertainments. The making of baskets and beadwork is a native industry among the Indians, and the Indian women found a novel and very successful means of securing funds for war needs by the sale of these wares.

The first of these organizations of the nature above mentioned to be formed on a reserve was the Six Nations Patriotic League, which was organized in October, 1914, and continued in operation with great success until the conclusion of the war. Upon the mobilization of Brock's Rangers, a battalion which has been hereinbefore mentioned, another women's patriotic society was formed on the Six Nations reserve under the name of the Brock's Rangers' Benefit Society. The purpose of this society was to provide for the needs of the Indian companies of this battalion. The society was very painstaking in its work and no Indian member of the battalion failed to benefit as a result of its efforts.

The Indian women of the Oneidas of the Thames, another Iroquois band, which sent a large number of its members to the front, also formed a patriotic league in 1916 in order to provide comforts for their soldiers. In the first year of its existence this society sent twenty-five boxes overseas; in 1917, one hundred and four, and in 1918, seventy-four up to the signing of the armistice. Each of these boxes contained thirty pairs of socks and twenty-four khaki sweaters.

A Red Cross society was formed by the Chippewas of Saugeen to provide comforts for the members of the band who were at the front. This organization raised more than $400 for the benefit of their soldiers by holding a series of box socials.

A branch of the Red Cross society was also formed by the women of the Rolling River band in the province of Manitoba, and the particularly fine quality of the beadwork which they sold for the benefit of the fund was the subject of special comment.

The women of the File Hills Colony, in Saskatchewan, formed a branch of the Red Cross Society in 1915, and in the fall of the same year there was also organized a branch of the Patriotic society at the colony. Branches of the Red Cross were also formed by the women of the Indian bands located at Qu'Appelle and Pelly, Sask., and the head office of the Saskatchewan Provincial Branch of the Red Cross stated that the sewing and knitting work of these Indian societies was unsurpassed in quality and workmanship by any received from any part of the province.

Similar activities to those above mentioned were carried on throughout the period of the war by the women on a great many of the reserves in all parts of the Dominion.

MILITARY ESTATES, PENSIONS AND ASSIGNED PAY.

The department is dealing with more than three hundred and fifty individual cases of military estates, pensions and assigned pay. This work has involved keeping close track of the dependents of Indian soldiers. In many cases, where the department thought that the pension or assigned pay might not be judiciously expended, it has administered the money for them. The result has been that these dependents have been maintained in good circumstances and that we have been able, through the exercise of considerable care, to fund about $25,000 over and above what has been expended for maintenance. This money, so funded, will be used chiefly on behalf of the children of Indian soldiers and in almost all cases will be sufficient to give them a splendid start in life.

GENERAL REMARKS.

There were more than five hundred Indians on the roll of the 107th Pioneer Battalion, which was commanded by the late Lieut.-Col. Glen Campbell, of Winnipeg, formerly Chief Inspector of Indian Agencies. Among these there were representatives of many different Indian tribes, including Crees, Saulteaux and Sioux from

the north and west; Mohawks, Onondagas, Oneidas, Tuscaroras, Delawares and Chippewas from Ontario, and Micmacs from the Maritime provinces. The excellent services rendered by these Indians in pioneer work was particularly commented upon, and especially their ability to adapt themselves to bad weather and awkward circumstances without complaint. Several of these Indians qualified for commissions after their arrival in England, and two of them, Private O. Barren and A. W. Anderson were awarded the Military Medal for gallantry in action. The Indian company of the 107th particularly distinguished itself by its coolness and efficiency in continuing at work under heavy fire during a terrific bombardment of Hill 70 near Lens.

Three of these Indians, Tom Longboat, Joe Keeper and A. Jamieson were well known in athletic circles as long distance runners, and another, John Nackaway, before enlisting had been a runner for the Hudson's Bay Company in the far north. These Indian athletes rendered invaluable service as despatch carriers.

About one hundred Indian recruits were secured in the remote regions of the Hudson Bay and Patricia districts. Many of these first came into contact with civilization as a result of joining the forces and a number of them were unable to speak a word of English. It is remarkable how rapidly these Indians became smart, well-disciplined soldiers and how well they adapted themselves to surroundings that were entirely new to them.

John Campbell, a full-blooded Indian who lived on the Arctic coast, travelled three thousand miles by trail, canoe and river steamer in order to enlist at Vancouver.

Many of the Indian soldiers were hunters in civil life and in consequence were expert marksmen. As a result of this experience they were able to render excellent service as snipers at the front and in this branch of fighting they were unexcelled. It is claimed that the Indians did much towards demoralizing the entire enemy system of sniping. They displayed extraordinary patience and self-control when engaged in this work and would sit hour after hour at a vantage point waiting the appearance of the enemy at his sniping post. The Indian snipers recorded their prowess by the picturesque method of notching their rifles for every observed hit. Three famous Indian snipers of the 8th Battalion, McDonald, an Iroquois; Riel, a grandson of the famous rebel, Louis Riel; and Ballantyne, a western Indian, had forty, thirty-eight and fifty-eight notches, respectively, on their guns. The two former were killed in action, but the latter survived the war and is now taking a course in gas engineering.

Many interesting letters were received from Indians at the front wherein were displayed keen powers of observation and exceptional descriptive ability.

Many of the Indian bands during the course of the war prepared memorials expressive of their loyalty and desire to assist to the utmost extent of their ability in the prosecution of the war, which were either forwarded to His Majesty King George V or to His Excellency the Governor General of Canada.

A large number of Indians have invested their savings in victory bonds, in a number of cases the amount invested by individual Indians exceeding $1,000. Chief Baptiste George, of Inkameep, in the Okanagan valley, B.C., purchased bonds to the amount of $21,000, and was presented with a victory bond flag upon two occasions.

The Indian returned soldiers have been tendered enthusiastic receptions by their fellow countrymen upon their return to the reserves. On some of the reserves suitable memorial tablets have been erected in honour of the members of the band who fell in the war. The return of so many Indian soldiers who have been broadened and inspired by contact with the outside world and its affairs is bringing about radical and progressive changes in the life of the reserves.

The Department is administering the Soldier Settlement Act with respect to Indians and some account of the work that is being done in connection with this subject will be found under the heading of Amendments to the Indian Act.

AMENDMENTS TO THE INDIAN ACT.

A number of amendments have been made to the Indian Act during the past year, the most important of which is that providing for the administration of the Soldier Settlement Act by the Department of Indian Affairs in so far as returned Indian soldiers are concerned.

SOLDIER SETTLEMENT.

The new provisions with regard to this matter are as follows:—

196. (1) *The Soldier Settlement Act, 1919* (excepting sections three, four, eight, nine, ten eleven, fourteen, twenty-nine, subsection two of fifty-one, and sixty thereof, and excepting the whole of Part Three thereof), with such amendments as may from time to time be made to said Act shall, with respect to any "settler" as defined by said Act who is an "Indian" as defined by this Act, be administered by the Superintendent General of Indian Affairs.

(2) For the purpose of such administration, the Deputy Superintendent General of Indian Affairs shall have the same powers as the Soldier Settlement Board has under *The Soldier Settlement Act, 1919,* the words "Deputy Superintendent General of Indian Affairs" being, for such purpose, read in the said Act as substituted for the words "The Soldier Settlement Board" and for the words "The Board."

(3) Said Act, with such exceptions as aforesaid, shall for such purpose, be read as one with this Part of this Act.

197. (1) The Deputy Superintendent General may acquire for a settler who is an Indian, land as well without as within an Indian reserve, and shall have authority to grant to such settler a location ticket for common lands of the band without the consent of the council of the band, and, in the event of land being acquired or provided for such settler in an Indian reserve, the Deputy Superintendent General shall have power to take security as provided by *The Soldier Settlement Act, 1919,* and to exercise all otherwise lawful rights and powers with respect to such lands, notwithstanding any provisions of the *Indian Act* to the contrary.

(2) Every such grant shall be in accordance with the provisions of said *Soldier Settlement Act, 1919,* and of this Part.

198. The Soldier Settlement Board and its officers and employees shall, upon request of the Deputy Superintendent General of Indian Affairs, aid and assist him, to the extent requested, in the execution of the purposes of this Act, and the said Board may sell, convey and transfer to the said Deputy, for the execution of any such purposes, at such prices as may be agreed, any property held for disposition by such Board.

199. (1) In the event of any doubt or difficulty arising with respect to the administration by the Superintendent General of Indian Affairs of the provisions of *The Soldier Settlement Act, 1919,* or as to the powers of the Deputy Superintendent General of Indian Affairs, as by this Act authorized or granted, the Governor in Council may, by order, resolve such doubt or difficulty and may define powers and procedure..

(2) Such order shall not extend the powers which are by *The Soldier Settlement Act, 1919,* provided. 9-10 Geo. V. c. 56, s. 4.

It is proposed to settle the Indian soldiers as far as possible on reserves belonging to the bands of which they are members, with a view to relieving the claims for land on behalf of returned soldiers to that extent. When these returned Indian soldiers are thus settled on the reserve, the administration of their affairs is, under the legislation above

quoted, left entirely in the hands of the Department of Indian Affairs, thus avoiding the confusion which would inevitably arise if their affairs were administered partly by the Department of Indian Affairs and partly by the Soldier Settlement Board. The Indian agents throughout the Dominion have a personal knowledge of the capabilities and needs of Indian returned soldiers belonging to their respective agencies, and are, therefore, able to supply the information and assistance required in the same manner as the qualification committee, field agents, inspectors, etc., under the Soldier Settlement Act, thus reducing the cost of the work to a minimum. This arrangement, moreover, is considered more satisfactory by the Indians themselves, who prefer to have all matters which relate to them personally in any way dealt with by their own department.

Section 21 of the Indian Act provides that:—

> "No Indian shall be deemed to be lawfully in possession of any land in a reserve, unless he has been or is located for the same by the band, or council of the band, with the approval of the Superintendent General."

and section 102 provides that:—

> "No person shall take any security or otherwise obtain any lien or charge, whether by mortgage, judgment or otherwise, upon real or personal property of any Indian or non-treaty Indian" with respect to property in a reserve.

Subsection 1 of section 197 of the amendment above quoted provides for the taking of the common lands of the band, if any be available, for an Indian soldier without reference to the Indian council of the band, and for the taking of proper security for advances to Indian returned soldiers.

These amendments give the department practically all the powers of the Soldier Settlement except those of expropriation. A large number of returned Indian soldiers have been glad to take advantage of the provisions of the Soldier Settlement Act. On the Six Nations reserve thirty-five loans have been granted, and altogether seventy-five have been dealt with in Ontario, Quebec, and Prince Edward Island. No return has been received from the western provinces as yet. Altogether the expenditure has been more than $100,000, and it is expected that next spring a large number of applications for loans will come in. The department has endeavoured to keep the loans as low as possible in order not to burden the settler with too large a repayment; but in all cases he has been given sufficient to secure everything which he needs. Proper security and mortgages are secured in each case, and it is confidently expected that there will be very few settlers who will not be in a position to repay the amounts advanced them. The work of the settlers has been an excellent incentive to other members of the band, and the progress which they are making is very satisfactory.

MINING RIGHTS.

Section 48 of the Indian Act, which reads as follows:—

> "Except as in this part otherwise provided, no reserve or portion of a reserve, shall be sold, alienated or leased until it has been released or surrendered to the Crown for the purposes of this part: Provided that the Superintendent General may lease, for the benefit of any Indian, upon his application for that purpose, the land to which he is entitled without such land being released or surrendered, and may, without surrender, dispose to the best advantage, in the interests of the Indians, of wild grass and dead or fallen timber," has been amended by adding thereto the following clause:—
>
> "Provided also that the Governor in Council may make regulations enabling the Superintendent General without surrender to issue leases for

surface rights on Indian reserves, upon such terms and conditions as may be considered proper in the interest of the Indians covering such area only as may be necessary for the mining of the precious metals by any one otherwise authorized to mine such metals, said terms to include provision for compensating any occupant of land for any damage that may be caused thereon as determined by the Superintendent General."

The precious metals belong to the provinces, but under the Indian Act prior to the passage of the amendment hereinabove quoted no lease of surface rights for the purpose of taking out these metals could be given without a surrender thereof from the band. Until recently the British Columbia Mineral Act and Placer Mining Act, respectively, provided that Indian reserves were to be excepted from the lands which might be entered upon for mining purposes. At the last session of the Provincial Parliament, however, amendments were passed whereby Indian reserves are no longer excepted, but until the amendment hereinabove quoted was passed the Indian Act still prevented any mining on a reserve without a surrender from the band. It was, therefore deemed necessary to pass this amendment in order to facilitate the operation of the provincial Act and to co-operate with the province with regard to mining rights in order that mutual benefits might be obtained therefrom in the most expeditious manner. Owing to local conditions, misapprehension or hostility on the part of a band, it is not always possible to secure a surrender for mining rights. This obstacle has been effectively overcome by the amendment.

TIMBER SALES.

Subsection 1 of section 89 of the Indian Act, which formerly read as follows:—

"With the exception of such sum not exceeding fifty per centum of the proceeds of any land, and not exceeding ten per centum of the proceeds of the timber or other property, as is agreed at the time of the surrender to be paid to the members of the band interested therein, the Governor in Council may, subject to the provisions of this part, direct how and in what manner, and by whom, the moneys arising from the disposal of Indian lands, or of property held, or to be held in trust for Indians, or timber on Indian lands or reserves, or from any other source for the benefit of Indians, shall be invested from time to time, and how the payments or assistance to which the Indians are entitled shall be made or given."

has been amended by striking out the words "and not exceeding ten per centum of the proceeds of any . . . ."

Prior to the year 1906 the Indian Act stipulated that a distribution of ten per cent of the proceeds of the sale of land or timber might be made to the Indians surrendering such, but on July 13, 1906, an amendment was passed authorizing the distribution of 50 per cent of the proceeds of the sale of land.

The primary object of the amendment of 1906 was to persuade the Indians to more readily surrender certain of their lands, and it resulted beneficially in the interests of the public. It is considered that the increase in the distribution of the proceeds of timber as well from ten to fifty per cent will be of special benefit to the Indians.

On many reserves the timber has either attained a mature stage of growth or is subject to a serious fire hazard and the cutting of such timber is well warranted if a system of proper forestry economics is to be followed.

On several occasions the Indians have refused to surrender their timber, notwithstanding the fact that it would be in the interests both of themselves and the public, unless upon condition that a larger portion than ten per cent of the proceeds would be distributed amongst them. This amendment has been passed, therefore, with the object of facilitating such surrenders.

ENFRANCHISEMENT.

In 1918 Parliament added the following section to the Indian Act with regard to enfranchisement:—

122A. (1) If an Indian who holds no land in a reserve, does not reside on a reserve, and does not follow the Indian mode of life, makes application to be enfranchised, and satisfies the Superintendent General that he is self-supporting and fit to be enfranchised, and surrenders all claims whatsoever to any interest in the lands of the band to which he belongs, and accepts his share of the funds at the credit of the band including the principal of the annuities of the band to which share he would have been entitled had he been enfranchised under the foregoing sections of the Act, in full of all claims to the property of the band, or in case the band to which he belongs has no funds or principal of annuities, surrenders all claims whatsoever to any property of the band, the Governor in Council may order that such Indian be enfranchised and paid his said share if any, and from the date of such order such Indian, together with his wife and unmarried minor children shall be held to be enfranchised

(2) Any unmarried Indian woman of the age of twenty-one years and any Indian widow and her minor unmarried children, may be enfranchised in the like manner in every respect as a male Indian and his said children.

(3) This section shall apply to the Indians in any part of Canada.

Prior to the passage of this amendment it was necessary for an Indian to be in possession of land on a reserve in order to become enfranchised under the Act. If the applicant did not happen to be in possession of land when his application was submitted he was obliged to secure a location from the council of the band. Among the more progressive bands the lands are all occupied, and there are no common lands from which locations could be given, and the enfranchisement, therefore, of individual Indians without lands was impossible. There are Indians from such bands who earn their living at various industries in towns and cities, and who would be glad to be enfranchised without claiming any land on the reserve whatsoever. These Indians have demonstrated their ability to support themselves and to exercise the rights and privileges of enfranchised persons, and it was, therefore, considered undesirable that their enfranchisement should be longer obstructed.

Many Indians qualified for enfranchisement under the provisions of the section of the Indian Act hereinabove quoted have availed themselves of this advantage. The following list shows by bands the number of Indians that have so far been enfranchised as a result of the passage of the amendment.

Six Nations	212
Mississaguas of the Credit	11
Mississaguas of Mud Lake	1
Mohawks of the Bay of Quinté	2
Ermineskin's	1
Total	227

The procedure adopted in connection with these enfranchisements is to obtain from each individual applicant a release and surrender under seal, providing that in consideration of the payment of the applicant's share of the funds at the credit of the band to which he belongs, he releases all claims whatsoever to any interest in the lands or property of the band, as well as all manner of action, actions or cause of actions or claims and demands whatsoever which he might have had or may have by reason of any matter, cause or thing whatsoever in respect of the said band. The

applicant in each case is also required to furnish a statutory declaration by a priest, clergyman or minister of the religious denomination to which he belonged, or by a justice of the peace or a notary public, to the effect that to the best of the knowledge and belief of the deponent the applicant has been for at least five years a person of good moral character, temperate in habits and of sufficient intelligence to hold land in fee simple and otherwise to exercise all the rights and privileges of an enfranchised Indian.

In addition to the above, the local Indian Agent is required in each case to report as to the earning capacity of the individual Indian, and that he did not reside on the reserve and owned no land thereon.

Upon satisfactory information being furnished as above, an Order in Council is applied for, and upon the passage thereof, a certified copy is forwarded to the applicant through the local Indian Agent, together with a cheque for the amount to which the applicant is entitled as his share, and if married, that of his wife and family, of the band funds.

The manner in which so many of the Indians have availed themselves of the opportunity to become enfranchised is gratifying and proves that the laws was needed. I think it would be in the interest of good administration if the provisions with regard to enfranchisement were further extended so as to enable the Department to enfranchise individual Indians or a band of Indians without the necessity of obtaining their consent thereto in cases where it was found upon investigation that the continuance of wardship was no longer in the interests of the public or the Indians.

EDUCATION.

There were 322 Indian schools of all classes in operation during the year, namely, 248 day, 58 boarding and 16 industrial.

As compared with the previous year there is a decrease of 16 in the day school class and one in the industrial.

Several of the day schools were closed owing to lack of attendance, and a number of others through inability to secure teachers. A few day schools, which had been closed for some time, were re-opened and new schools started at several points.

The Elkhorn industrial school was closed from May 1, 1918. This accounts for the decrease of one school in this class.

The total enrolment for the year was 11,952 pupils, 5,966 boys and 5,986 girls. This, as compared with the previous year shows a decrease of 461 pupils, 245 boys and 216 girls. There was an enrolment of 7,312 in the day schools. 3,018 in the boarding schools and 1,622 in the industrial schools.

The average attendance during the year was 7,532, a decrease of 346.

The percentage of attendance of the number enrolled during the year was 63·02.

In additon to the above about 100 Indian children, the greater number of whom are orphans, are being cared for and educated in public and private residential institutions throughout the Dominion.

The 322 schools comprising day, boarding and industrial in operation during the year were conducted under the following auspices: Undenominational, 53 day and one industrial; Roman Catholic, 83 day, 32 boarding and 8 industrial; Methodist, 42 day, 3 boarding, and 4 industrial; Presbyterian, 4 day and 7 boarding, and the Salvation Army, one day school.

The Indian schools in Ontario, Quebec, Nova Scotia, and Prince Edward Island are inspected semi-annually by the provincial, separate and public school inspectors under arrangements with the Department of Education in each province. In New

Brunswick and British Columbia Indian schools are inspected by officials appointed by the department. In Manitoba, Saskatchewan, Alberta, and the Northwest Territories the schools are inspected by the inspectors of the different Indian agencies; regular visits are made, and reports submitted to the department. In addition to this inspection, almost all the schools are under the direct supervision of the different Indian agents, who are required to make monthly inspections and reports.

Qualified teachers with professional training are engaged whenever it is possible to obtain them, and in the older settled portions of the different provinces the greater number of the teachers are so qualified. In the schools situated in the more remote reserves it is difficult to secure teachers with certificates. Many of our teachers who have not professional qualifications have, however, long experience and are meeting with a great measure of success in Indian school work.

Our schools compare favourably with white schools similarily situated with respect to the work in the class-room, and in accommodation and equipment provided.

It has been found necessary in many cases to increase the salary of the teachers in the day schools. A war bonus at the rate of $150 per annum, was paid to those teachers who were in the employ of the department on March 31, 1918, and who gave continuous service throughout the year.

In the day schools the course of study prescribed for the provincial, public and separate schools is strictly followed.

At practically all the residential schools there was a large acreage under cultivation. At many of the day schools also school gardens were conducted. The pupils are thus enabled to receive a general knowledge of agriculture which should be of great use to them in after life.

The policy of granting assistance to graduates to encourage farming has been maintained. Upon leaving school a male ex-pupil may be given a grant of cattle, horses, implements and building material. During the past fiscal year 6 girls and 12 boys, ex-pupils, have been assisted to the extent of $2,611.50, and refunds on previous loans to the amount of $2,249.01 have been received.

The expenditure on Indian education from Parliamentary Appropriation during the year amounted to $735,504.90. Expenditures for new buildings and repairs to old buildings were reduced to as low an amount as possible during the year. The following statement will show the expenditure for the fiscal year ended March 31, 1919, for Indian education from Parliamentary Appropriation:—

Province.	Day Schools.	Boarding Schools.	Industrial Schools.	Ex-pupils.	Travel and Salaries.	Tuition.	Freight Expenses.	Miscellaneous.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Ontario	21,883 94	33,729 87	55,072 47		6,346 99	1,225 89	454 83	2,406 87	121,120 86
Quebec	28,174 87					4,151 20	387 25	2,449 07	35,162 39
Nova Scotia	6,038 80					371 48		184 89	6,595 17
New Brunswick	6,731 47				536 45	78 00	2 75	198 55	7,547 22
Prince Edward Island	907 09							24 46	931 53
Manitoba	21,653 00	70,871 59	22,750 66	1,950 85	300 00	271 51	826 40	5,322 52	123,946 53
Saskatchewan	20,830 58	76,129 50	29,828 57	448 00	400 00	100 00	749 52	1,208 24	129,694 41
Alberta	2,492 90	80,106 09	16,628 90				632 62	1,094 82	100,955 33
Northwest Territories	453 75	22,563 53					818 36	51 63	23,887 27
British Columbia	32,479 72	48,366 44	90,392 11	212 65	2,102 65	137 85	601 73	1,503 84	175,797 02
Yukon	2,988 00	6,765 57					80 79	32 79	9,867 15
Totals	144,634 12	338,532 62	214,672 71	2,611 50	9,686 09	6,335 93	4,554 25	14,477 68	735,504 90

In addition to the above, the various bands of Indians, whose funds are sufficient to meet the outlay, contributed the sum of $33,919.12 towards the payment of teachers' salaries and the maintenance of school buildings on their reserves. For the fiscal year ended March 31, 1919, the amounts so contributed have been as follows:—

Account No.	Band.	Interest.	Capital.
		$ cts.	$ cts.
1	Ojibbewas of Batchawana	876.80	
2	Chippewas of Beausoliel	276.66	
3	Chippewas of Nawash	2,156.21	
4	Chippewas of Rama	699.13	
5	Chippewas of Sarnia	1,984.99	
6	Chippewas of Saugeen	1,902.90	
7	Chippewas of Snake Island	143.89	
8	Chippewas of The Thames	863.93	
9	Chippewas of Walpole Island	242.28	
12	Ojibbewas of Garden River	810.50	
13	Ojibbewas of Henvey Inlet	70.83	
14	Ojibbewas of Nipissing	623.97	
15	Manitoulin Island (unceded)	533.45	
17	Mississaguas of Alnwick	570.65	
18	Mississaguas of Credit	454.00	
19	Mississaguas of Rice Lake	312.00	
20	Mississaguas of Mud Lake	200.95	
22	Mohawks of Bay of Quinte	2,397.38	
23	Moravians of Thames	746.46	
30	Chippewas of Parry Sound	312.00	
33	Six Nations of Grand River	11,348.14	3,000.00
34	Shawanaga	102.62	
50	Algonquins of River Desert	502.75	
82	Ojibbewas of Whitefish Lake	328.66	
182	Dokis Band	230.68	
246	Ojibbewas of Sheguiandah	446.04	
247	Ojibbewas of Sheshegwaning	847.30	
248	Ojibbewas of South Bay	131.25	
249	Sucker Creek	91.78	
251	Ojibbewas of West Bay	710.92	
		30,919.12	3,000.00
	Total		$33,919.12

The amount expended from interest represents current expenses, while the expenditure from capital was an outlay for new buildings.

At the request of the directors, an exhibit of Indian school work was made at the Central Canada Exhibition at Ottawa in September, 1918. A creditable display of sewing, writing, drawing and other school work was made and the exhibit elicited a great deal of favourable comment.

A comprehensive statistical statement will be found in Part II of this report, showing the enrolment and attendance at all classes of schools.

REAL AND PERSONAL PROPERTY.

The following table shows a steady and substantial increase from year to year in the value of the real and personal property of the Indians.

——	1917	1918	1919
	$	$	$
Total value of lands in Reserves	48,057,758	49,782,695	51,146,347
Value of private fencing	1,273,120	1,288,532	1,333,319
Value of private buildings	4,551,097	4,616,745	4,766,286
Value of public buildings, property of the Band	1,236,805	1,181,987	1,223,648
Value of implements and vehicles	1,540,407	1,581,080	1,710,875
Value of live stock & poultry	3,998,663	4,471,945	4,613,062
Value of general effects	955,806	1,020,042	1,069,424
Value of household effects	1,272,259	1,342,086	1,399,454
Total Value of Real and Personal Property	62,885,915	65,285,112	67,262,415

The following table shows by provinces a marked increase in the per capita value of the real and personal property of the Indians during the past four years.

Per capita value of real and personal property.

Province.	1916 P. C. Value of Real and Personal Property.	1917 P. C. Value of Real and Personal Property.	1918 P. C. Value of Real and Personal Property.	1919 P. C. Value of Real and Personal Property.
	$ cts.	$ cts.	$ cts.	$ cts
Alberta	1655 20	1852 05	2058·18	2121·78
British Columbia	686·41	687·03	666·47	695·07
Manitoba	259·80	270·04	288·86	300·83
New Brunswick	118·60	119·30	119·85	124·09
Nova Scotia	110·31	114·74	121·02	120·67
Ontario	331·42	332·38	342·26	344·06
Prince Edward Island	147·17	155·62	154·85	163·15
Quebec	206·76	208·92	212·42	214·90
Saskatchewan	1234·82	1286·88	1317·48	1366·84
Average	593·79	624 45	658·10	667·95

It will be noted that since 1916 the average per capita increase has amounted to $74.16; in the province of Alberta there has been an increase of nearly $500 per capita since 1916, which is a gratifying indication of progress among the western Indians. The fact that the per capita value of the real and personal property of these Indians exceeds $2,000 will afford some idea of the well-to-do circumstances in which they are situated.

Further detailed statistics of real and personal property will be found under the heading of Table 5, Part II of this report.

SOURCES AND VALUE OF INCOME.

The following table shows the sources and value of the income of the Indians during the past four years, and it will be observed that the increases have been sufficient to offset in a great measure the increase in the cost of living during this period:—

	1916.	1917.	1918.	1919.
	$	$	$	$
Value of farm products including hay	2,246,507 00	2,351,807 00	2,834,149 00	3,142,046 00
Value of beef sold and also of that used for food	307,779 00	346,792 00	388,885 00	424,419 00
Wages earned	1,530,373 00	1,748,588 00	2,043,137 00	2,226,449 00
Received from Land Rentals and from timber	117,126 00	109,743 00	137,088 00	166,299 00
Earned by fishing	655,528 00	721,988 00	823,298 00	950,943 00
Earned from other industries and occupations	593,298 00	908,216 00	945,527 00	1,314,420 00
Earned by hunting and trapping	790,880 00	677,163 00	690,595 00	675,947 00
Annuities paid and interest on Indian Trust Fund	450,496 41	436,189 00	555,628 10	616,341 85
Total	6,691,993 41	7,300,486 00	8,418,307 10	9,516,864 86

PER CAPITA INCOME OF INDIANS.

The following table shows the per capita income of the Indians by provinces during the past four years:—

Province.	1915 Per Capita Income.	1916 Per Capita Income.	1917 Per Capita Income.	1918 Per Capita Income.	1919 Per Capita Income.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Alberta	57 93	75 29	96 39	106 17	103 76
British Columbia	64 57	67 34	74 56	70 73	90 35
Manitoba	54 72	62 10	64 34	66 43	63 14
New Brunswick	48 72	43 88	37 52	37 77	33 69
Nova Scotia	54 60	59 03	62 24	64 93	75 12
Ontario	66 51	74 77	70 20	98 66	107 32
Prince Edward Island	28 56	37 17	70 90	35 00	35 46
Quebec	42 36	42 73	54 90	66 27	67 33
Saskatchewan	71 13	79 84	90 51	111 38	121 96
Average	60 48	66 74	72 49	84 59	94 57

Further statistics with regard to sources and value of income will be found under the heading of Table 6, Part II of this report.

HUNTING AND TRAPPING.

Many of the Indians, especially in the more remote and outlying parts of the country still depend upon hunting and trapping for a livelihood. These Indians have benefitted very materially from the present exceptionally high prices paid for furs. I may here mention that there exists a certain misunderstanding on the part of many people with respect to the position of the Indians with regard to hunting and trapping. There would appear to be rather a widespread belief that the Indians are specially exempted from the application of the provincial game laws. This is not the case. It is true that in that part of Ontario situated north and west of the French and Mattawa rivers treaty Indians are allowed to trap ten otter or beaver without buying a license.

This privilege was extended to these Indians by Order in Council of the provincial government. Elsewhere in the Dominion the Indians are obliged to comply with the game regulations in the same manner as other persons. The provincial governments have in many instances, however, taken the position that the game laws should be to some extent non-irritant in their application to Indians in view of the fact that hunting is their natural means of livelihood. It is the policy of the department to endeavour to secure special privileges for the Indians with regard to hunting and trapping in so far as consistent with adequate protection for the preservation of the game.

CENTRAL CANADA EXHIBITION INDIAN EXHIBIT.

The Department has for the last few years held an Indian Exhibit at the Central Canada Exhibition, Ottawa. This year it took the form of an Indian handicraft exhibit, in which the handiwork of the Indians of different reserves was shown. An Indian canoe-maker and his wife from Maniwaki occupied one booth and made during the week a 12-foot birch bark canoe. Another booth was occupied by three Huron Indians of Lorette who made snow-shoes, moccasins and fancy slippers. The third booth was used for a display of sweet grass basket work by the Abenakis Indians of Pierreville with two of their number making baskets throughout the exhibition week.

The exhibit proved exceedingly attractive, and the handiwork of the Indians in their different arts was very highly commented upon by the large number of people who patronized it.

BUILDINGS.

Owing to the necessity of economy in expenditure, there has been very little new building undertaken by the department during the past year.

A new school is being erected at Alberni, B.C., to replace the one that was totally destroyed by fire on June 2, 1917.

A new barn is being erected for the Kamloops Indian Industrial School to care for the large crops resulting from the new irrigation system.

A new day school has been erected on the Tyendinaga reserve.

Teachers' residences have been erected for the Red Bank School, N.B., and Garden Village School, Ont.

Alterations and additions were carried out to the buildings at Tobique, N.B., and fire-escapes and ventilation systems were erected at the Abenakis School and the Girls' and Boys' School at Caughnawaga.

ROADS, BRIDGES, WHARVES, DRAINAGE AND WATERWORKS.

A considerable amount of repair work of a permanent character has been done in connection with the main highways and bridges on various reserves. A number of concrete culverts and new bridges have been erected to replace old wooden and stone constructions, which previously entailed frequent expenditures for their maintenance, etc.

Among the reserves on which special road repairing work was carried out are the following: Doncaster, from St.. Lucie to Notre Dame de la Mercie; Caughnawaga, Que., to St. Isidore and Ste. Philomene roads; Restigouche, Que.; Timiskaming, Que.; Rama, Ont.; Sarnia, Ont., the River and Second Line Roads; Kettle Point, Ont.; Stony Point, Ont.; Cape Croker, Ont.; Saugeen, Ont.; Tobique, N.B.; St. Peter, N.S.; Sheshegwaning, Ont.; and Fort Alexander, Man.

New culverts and bridges of concrete have been erected to replace wooden ones on the Laprairie road, Caughnawaga, Que., on the main road of the Abenakis reserve, the Slash road, Tyendinaga reserve, over the Spring and Boston creeks, Caradoc reserve, and on the River road, Moravian reserve.

A number of drains have been constructed on the Six Nations reserve, Sarnia, Caughnawaga, Caradoc, St. Regis, and at Kamloops, B.C., where an elaborate irrigation system is in the course of completion, and on other reserves where farming is being conducted on a large scale.

A steel bridge has been erected over the McKenzie creek, at the Six Nations reserve, and surveys and plans are in course of preparation for the building of a bridge on the Dummy road, Caradoc reserve, and also at Broken Head, Man.

A number of waterwork systems are in course of construction to supply water to some of the large Indian schools at Caughnawaga, Que., at Sechelt, B.C., and also at the Indian hospital, Caughnawaga.

Substantial repairs have been made to the wharf at the Cape Croker reserve, Ont. Concrete sidewalks have been constructed in the main streets of the Indian villages of Caughnawaga and Betsiamites.

There is a useful co-operation between this department and the Water Powers Branch of the Department of the Interior. The technical officers of this branch in British Columbia have rendered material assistance to the department in planning irrigation schemes, and in dealing with the water records of the Indians before the provincial board; their services are gratefully acknowledged.

SURVEYS.

ONTARIO.

Two plots of land were surveyed at White Sand river and Sand Point, Lake Nipigon, for the use of the Indians, under a license of occupation granted by the province.

At the request of the Indian council, the village of West Bay was surveyed and posted and a plan made.

SASKATCHEWAN.

The recently surrendered portion of the Poorman's reserve No. 88 was surveyed for the purpose of sale.

Surveys were made of the lands in the Gordon Indian reserve No. 86 exchanged for school purposes with the Church of England.

A subdivision into town lots for purposes of sale was made of a tract of land, named Lakeview (at Regina Beach), in the Last Mountain Indian reserve No. 80-A.

ALBERTA.

Surveys were made for the purpose of deciding on the locations of certain roads and of certain sections at the south end of the Blood reserve No. 148 for the purposes of leasing the land.

A large portion of the Blackfoot Indian reserve No. 146 was surrendered to be leased; the land was subdivided for the purpose.

BRITISH COLUMBIA.

An exchange of a small area of land was made by the Cowichan band on account of the house of an adjoining owner having been found to be within the limits of one of their reserves. The necessary surveys were made.

YUKON.

The boundary marks of the Indian reserve at Lake Laberge were replaced at the request of the local magistrate to facilitate the prevention of the sale of intoxicants.

LANDS.

Sales of surrendered, surveyed lands are shown in the tabular statement No. 1, herewith, and during the past year 19,010·45 acres were sold, realizing $104,656.57.

During the year 305 Crown grants were issued and recorded under the provisions of the Indian Act, and forwarded either direct to the patentees or to the different registrars of titles for the districts in which the lands patented were situate, in accordance with the Land Titles Act.

Returns of Crown grants to the number of 41 were prepared and forwarded to the registrars of the counties and districts in which the lands patented were situate, and four returns were made to the provincial secretary of Ontario covering lands patented within that province.

On the 7th of August, 1918, the lots on the Fairy Lake Indian reserve, in the counties of Annapolis and Queens, in the province of Nova Scotia, were offered for sale by public auction, at Caledonia, in the county of Queens, and a number of the lots were sold, realizing satisfactory prices over and above the upset prices. Subsequently the unsold lots were disposed of at the upset prices placed thereon.

On the 31st of July, 1918, tenders were called for coal on the North Thompson reserve, in the district of Kamloops, in the province of British Columbia, and a lease was issued to the highest tenderer, at an annual rental of $305 for surface rights, and a royalty of 15 cents per ton on all coal mined from the reserve.

On the 1st of March, 1919, tenders were called for 2,484 acres of land in the township of Tupper and 2,776 acres of land in the township of Yankoughnet, in the district of Algoma, and province of Ontario, and a sale was made of the property to the highest tenderer for the sum of $2,104.

On the 23rd of March, 1918, the Touchwood Hills and Qu'Appelle bands of Indians surrendered to the Crown reserve No. 80A, comprising 1,408 acres, to be sold for their benefit, and a subdivision survey has been made of a townsite on this reserve with the object of disposition of the lots for summer resort purposes.

Under an amendment to the Indian Act of last session, which provided for the enfranchisement of Indians not residing on an Indian reserve, not following the Indian mode of life, and being self-supporting and fit for enfranchisement, a large number of members of the Six Nations band of Indians have relinquished their rights in the lands and funds of the band, and have been duly enfranchised by Order of His Excellency in Council.

LOCATION TICKETS.

Location tickets granting title under the provisions of the Indian Act to individual owners for lands on their reserves were issued during the past year to the number of 82, and on the 31st of March last there were current 2,209 location tickets.

RETURNED SOLDIER SETTLEMENT.

As there is pressing need for securing land for the settlement of returned soldiers under the provisions of the Soldier Settlement Act, the comparatively large areas of Indian reserve lands throughout the country, which were but scantily used by the Indians, were sought as a source of supply.

This department lost no time in inaugurating prompt and comprehensive measures in collaboration with the Soldier Settlement Board to take a complete survey of all

available lands, and to make proper legal arrangements for placing these at the disposal of the Board. All the unsold surrendered lands in the market were turned over to the Soldier Settlement Board for acquirement, if, on investigation, they found the character of the land suitable for their purposes. It was realized that the Indian reserves in the provinces of Manitoba, Saskatchewan and Alberta might yield extensive regions of cultivable land.

The areas of the reserves set apart under treaty were generous, but were given as part compensation for the cession of title, and with the intention that, in the future, the proceeds from the sale of the lands might form funds from which the Indians could be maintained. That they have legal title to the lands, which can only be surrendered and sold with their consent, is a fact sometimes lost sight of.

The department, acting in conjunction with the Board, arranged for a joint examination and valuation of these properties, and Mr. Commissioner W. M. Graham undertook this important duty. When the lands were found to be acceptable to the Board, and when a valuation had been placed upon them, Mr. Graham negotiated a surrender from the Indians.

In no case have the Indians refused to part with their lands for fair and reasonable payments, and the action has resulted in already placing 62,128 acres of land in the hands of the Board, and 9,134 acres, which had already been surrendered, were rendered available.

It will, therefore, be seen that Indian reserves in the western provinces have already furnished 71,262 acres for this important public purpose.

In arranging the financial side of the surrenders, great care was taken to see that the money paid for the lands would not be squandered, but spent in a way to advance the civilization of the Indians.

LEASES.

Under the provisions of section 11 of the regulations for the disposal of Indian lands, lease were issued in triplicate to white men at the request of Indian locatees, and for the purpose of increased production, to the number of 89, and on the 31st of March, last, there were 1,362 leases current.

TIMBER.

The quantity of timber cut on Indian reserves during the year May 1, 1918-April 30, 1919, was 75 per cent greater than during the previous license year. The quantities cut under license and permit were:—

Pine	feet, B.M.	16,488,616
Spruce	" "	2,511,955
Spruce for aeroplanes	" "	1,125,435
Hemlock	" "	1,963,965
Douglas fir	" "	2,091,873
Other coniferous timber	" "	728,539
Hardwood timber	" "	341,153
Poplar and cottonwood	" "	1,189,292
Cordwood for munitions	cords.	11,112
Cordwood for fuel	"	6,255
Pulp-wood	"	10,709
Shingle bolts	"	6,167
Ties	No.	12,875
Posts	"	5,921
Boom timber	cu. ft.	185,278

Owing to the curtailment of operations under license due to war conditions and the outbreak of the influenza epidemic the quantity cut under license was considerably less than in the previous year, but this was offset by the much larger quantity of timber cut under permit for sale by the Indians themselves.

In addition to the above quantities the Indians cut approximately 20 million feet B.M. of timber for their own use and 28,000 cords of fuel wood, besides a large quantity of unclassified timber for the native manufacture of axe handles, baskets, hockey sticks and snowshoe bows.

Sales of timber and cash receipts during the year were:—

Bonus for timber on Sliammon reserve	$ 5,000 00
" " Seabird island	15,100 00
" " Bersimis reserve	141,000 00
" " Reserve 38B	2,000 00
" " Block D Cheakamus	6,000 00
Bonus for hardwood timber on Lower French River	10,000 00
Dues on timber cut under license	43,672 95
" " " permit	30,488 06
Trespass dues	3,425 58
Ground rents and renewal fees, etc	1,587 50
Total	$258,274 09

There were twenty-five licenses current on April 30, 1919, being two more than in the previous year.

Estimates of timber and reports on land of seventeen reserves were prepared in the course of the usual administrative work and this data has been added to the record of the natural resources of the Indians of Canada which is in course of preparation.

The Indians in certain parts of the Dominion contributed an appreciable quantity of raw material during the course of the war by cutting large quantities of timber for the manufacture of aeroplanes and for use in the distillation of acetone in the manufacture of high explosives.

Increased efforts have been directed during the past year toward a closer utilization of the timber resources of the Indians by salvaging burned or damaged timber cutting of diseased or over-prime trees and a general regulation of all operations on reserves so that waste consequent on hap-hazard methods of lumbering may be reduced to a minimum.

Energetic steps have recently been taken to check and eliminate illegal cutting of timber on Indian reserves by white men and other unauthorized persons, especially in the eastern provinces, and the imposition of fines amounting in the aggregate to almost ten times the amount of previous years is significant of the results being achieved in this direction.

SUMMARY OF INDIAN AFFAIRS IN THE VARIOUS PROVINCES BASED ON THE REPORT OF THE DEPARTMENT'S AGENTS AND INSPECTORS FOR THE FISCAL YEAR ENDED MARCH 31, 1919.

The local administration of the Indian lands, on the reserves scattered throughout the Dominion, is conducted through the department's agencies, of which there are in all 114. The number of bands included in the agency varies from one to more than thirty. The staff of an agency usually includes various officers in addition to the agent, such as medical officer, clerk, farm instructor, field matron, constable, stockman, etc., according to the special requirements of the agency in question. At many of the smaller agencies in the older provinces, where the Indians are more advanced, the work is comparatively light, requiring only the services of an agent. The work of the agencies is supervised by the department's inspectors, each inspector having charge of a certain number of agencies.

ONTARIO.

Agencies.—The following agencies are included in the province of Ontario: Alnwick, Bay of Quinte, Cape Croker, Chapleau, Chippewas, Munsees and Oneidas of the Thames, Christian Island, Fort Frances, Georgina and Snake Islands, Golden Lake, Gore Bay, Kenora, Lake Superior (Eastern and Western Divisions), Manitowaning, Mississaguas of the Credit, Moravians of the Thames, Parry Sound, Rama, Rice and Mud Lakes, Sarnia, Saugeen, Scugog, Six Nations, Sturgeon Falls, Thessalon and Walpole Island.

Tribal Origin.—The great majority of the Indians of Ontario are Ojibwas, and are of Algonkin stock. The Oneidas of the Thames, the Mohawks of the Bay of Quinte, the Mohawks of the Parry Sound district, and the Six Nations of Brantford are of Iroquoian stock. There is a band of Pottawattamies at Walpole Island, and Delawares at the Caradoe agency; these are of Algonkin stock.

Occupations.—The principal occupation of the Indians in the eastern, central, and southern parts of the province is mixed-farming, including grain-growing, stock-raising, vegetable gardening, and dairying. There has been a great improvement during the past few years in their methods of cultivation, which is largely due to the work of the department's field agents.

An account of the part played by the Indians of Ontario in the campaign for greater production will be found on page 8. Statistics with regard to agricultural operations will be found on page 61, Part II. During the summer months the Indians find a profitable source of income in employment as guides and canoemen for tourists, surveyors, prospectors, and fire rangers. Some of them work as sailors and deckhands for navigation companies on the great lakes, and a number are employed on the railways in summer. In lumbering districts many of the Indians work in the lumber shanties during the winter months, and at river-driving in spring, and in the mills in summer.

Many of the Indians who live in the vicinity of the centres of population are employed as day labourers in the various local industries, such as canning factories, cement works, implement factories, oil refineries, iron works, box factories, brick and tile-making, flax pulling, etc.

Some of the Indian women are employed as domestics; and many of them derive a considerable income making fancy-work and baskets. At Rice Lake and Savanne some of the women and children engage in berry and wild-rice picking. The Indians still find a profitable source of income in the making of mitts, moccasins, snowshoes, and canoes.

Health and Sanitation.—The Indians of Ontario in common with other sections of the population suffered very severely from the epidemic of influenza and the mortality among them as a result of this cause was high. The department's medical officers and the agency staffs spared no effort in their efficient and energetic efforts to prevent the spread of the disease. Unfortunately it was impossible to secure adequate medical attention for the Indians living in the more outlying parts, a circumstance which is not remarkable in view of the fact that a similar situation existed in the majority of the white communities throughout the Dominion.

Dwellings.—The great majority of the Ontario Indians have frame houses, which are in many cases well built and comfortable, and compare very favourably with those found in white communities. Some of the Indians have houses of stone or brick. At the Christian Island, Georgina and Snake Islands, Fort Frances, Gore Bay, Kenora, Savanne, Fort William and Sturgeon Falls agencies the majority of the houses are still of log construction. In the districts included in the Chapleau and Fort William agencies many of the Indians continue to live in tepees.

New Ontario.—Hunting and fishing are the chief sources of livelihood for the Indians of Northwestern Ontario and the James Bay district. Their only source of income is acting as guides and canoemen in the summer months. These northern districts are not suitable for agriculture, but the Indians are beginning to raise potatoes with some measure of success. These Indians live in tents throughout the year.

They are very subject to tuberculosis, although their health is otherwise good.

QUEBEC.

Agencies.—The following agencies are included in the province of Quebec: Becancour, Bersimis, Caughnawaga, lake St. John, Lorette, Maria, Mingan, Oka, River Desert, Ristigouche, Seven Islands, St. Francis, St. Regis, Timiskaming and Viger.

Tribal Origin.—The principal tribes found in Quebec are: Iroquois at Caughnawaga, lake of Two Mountains, and St, Regis; the Hurons of Lorette are also of Iroquoian stock; the Montagnais, who are also of Algonkin stock, at Bersimis, Mingan, lake St. John and Seven Islands; the Abenakis, also of Algonkin stock, at Becancour and St. Francis; the Micmacs, also of Algonkin stock, at Maria and Ristigouche; and the Malecites, also of Algonkin stock, at Viger.

Occupations.—In the agricultural districts of the province the Indians are displaying much keener interest in farming, and market gardening, and a marked improvement is observable in their methods of cultivation.

In the Gaspe peninsula and districts adjacent thereto, the Indians are chiefly employed in the lumber shanties. In the Maniwaki and North Timiskaming agencies also a number of Indians work in the shanties.

One of the principal industries among the Indians of this province is the making of ash and sweet-grass baskets. A number of them spend the summer in the country resorts in the United States, where they sell baskets to tourists. The Indians also make lacrosse sticks, axe handles, racquets, and moccasins. Some of them are employed as guides to tourists and canoeists.

The majority of the Indians of the village of Caughnawaga, situated near Montreal, are employed with the Dominion Bridge Company at Lachine, where they are recognized as exceptionally skilful in bridge construction and metal work. They earn good wages and many of them, therefore, are in very comfortable circumstances.

Health.—Although influenza was prevalent among the Indians of Qnebec, the epidemic was not nearly so widespread as in the other provinces, and the mortality from this cause was much lower. In other respects the health of the Indians of Quebec has been normal during the past year.

Dwellings.—In the settled parts of the province, the great majority of the Indians live in houses of frame construction, which are as a rule comfortable and well built. Some of them have good stone houses. In the more remote northern district many of the Indians continue to dwell in tents.

Lower St. Lawrence.—Among the Indians of the lower Gulf of St. Lawrence the fishing industry has been carried on with greater success this year. The Indians are taking more interest in the work, and are now quite competent fishermen. For the past few years, while the Indians were learning how to catch and cure the fish, it has been necessary to engage a practical man for each band during the summer months to instruct them as to salting, drying, etc. It is no longer necessary to do this, and it is hoped that in future the Indians will carry on the work themselves. Their earnings have increased from year to year and they now realize the advantage to be gained by working during the summer months, which they formerly spent in idleness.

At Bersimis, on the river St. Lawrence, steps have been taken to establish that band in the salmon fishing industry. Snow houses are being constructed and the necessary equipment prepared for operations next year. It is hoped that this will provide not only fresh food for the Indians during the salmon fishing season, but an appreciable income as well from proceeds of salmon sold, which will be shipped fresh to city markets.

NEW BRUNSWICK.

Agencies.—There are three agencies in the province of New Brunswick, the Northeastern, located at Buctouche, the Northern, located at Perth, and the Southwestern, located at Fredericton.

Tribal Origin.—The majority of the Indians of New Brunswick belong to the Micmac race, which is of Algonkin stock. In addition to these there are some bands of Malecites, also of Algonkin stock.

Occupations.—In the northeastern division the Indians are engaged in fishing, hunting, trapping, and farming. A number work in the lumber woods during winter and at the lumber mills in summer. In the northern division the Indians work in the woods in winter, river drive in the spring, and are for the most part employed as farm labourers in the summer and fall. In the southwestern division the Indians support themselves chiefly by the sale of Indian wares. In all parts of the province the Indians are expert at making baskets, snowshoes, moccasins, and other Indian wares.

The Indians of this province are showing a greater interest in farming than formerly.

Health and Sanitation.—The Indians of New Brunswick, in common with other sections of the community, suffered heavily from the epidemic of influenza. Otherwise their health has been good during the past year. Reports of the departmental officers indicate that they are paying more attention to the laws of hygiene and sanitation from year to year and that a fairly high standard now prevails among them in these matters.

Dwellings.—The great majority of the Indians of New Brunswick live in small frame houses, which in most cases are well built and well cared for. A gradual improvement is observed from year to year in their dwellings and outbuildings.

NOVA SCOTIA.

Agencies.—The following agencies are included in the province of Nova Scotia: Yarmouth, Digby, Annapolis, Shelburne, Queens, Lunenburg, Halifax, Cumberland, Colchester, Pictou, Antigonish-Guysborough, Richmond, Victoria, Inverness, Kings, two in Hants county (Windsor and Shubenacadie), and two in Cape Breton county (Sydney and Eskasoni).

Tribal Origin.—The Indians of Nova Scotia, numbering about two thousand, are Micmacs. They are of Algonkin stock.

Occupations.—The occupations followed by Indians in Nova Scotia are varied, rather more so than those ordinarily engaged in by other inhabitants of the province. Indians, residing permanently on reserves and forming organized communities, cul-

tivate the soil. Their principal farm products are potatoes, turnips, garden vegetables, hay, and live stock—chiefly horses and cattle. A considerable number of our Indians do not live on reserves, but on private properties, as squatters, near railway lines. These make their living by hiring as day labourers, and by the manufacture of Indian wares, which are always in very good demand at remunerative prices. This latter occupation is a fruitful source of income to all the Nova Scotia Indians at certain periods of the year and includes the manufacture of hockey sticks, axe-handles, pick-handles, butter-tubs, baskets of various kinds for different purposes, fancy moccasins, etc. Between seed time and harvest many of the younger Indians leave their homes to work at industrial centres, such as the Sydneys, New Glasgow, and Halifax, where they readily find profitable employment. A certain class make lumbering in its various branches their chief occupation. They assist in cutting the timber in the forests, in conveying it to the saw-mills, and finally, in converting it into boards, deals, scantling, shingles, laths, etc. Other occupations in which the Indians of Nova Scotia engage at seasonable times are fishing, trapping fur-bearing animals, and acting as guides for sportsmen.

Health and Sanitation.—The Indians of Nova Scotia in common with those in all other parts of the Dominion suffered severely during the past year from the epidemic of influenza. They also underwent an epidemic of small-pox. The percentage of deaths as a result of the epidemic of influenza among the Indians in this province, however, was not as high as in the case of the white population.

The Indians of Nova Scotia are gradually acquiring a better understanding of the necessity for observing in a practical way the sanitary regulations prescribed for their benefit by the department, and consequently their general health is improving. Tuberculosis, once rampant among them, seems to be slowly disappearing.

Dwellings.—On all the reserves in this province the houses of the Indians as a rule are small frame buildings, usually well constructed. Squatters on private property live in shacks covered with tar paper.

PRINCE EDWARD ISLAND.

Agency.—There is but one agency for the whole province which includes the reserves of Lennox Island, Rocky Point, Scotchfort and Morell. The population which at the last census was 292 seems to have decreased to a considerable extent. This decrease has been caused by the demand for labour in the neighbouring provinces and it is difficult to ascertain where their permanent domicile is, as they frequently move from one province to another.

Tribal Origin.—The Indians of Prince Edward Island belong to the Micmac tribe, which is of Algonkin stock.

Health.—The health of the Indians has been fairly good. The epidemic of influenza, which was so disastrous in other places, did not cause such ravages in this province; only three deaths being directly due thereto. They have been very careful to observe the rules of sanitation laid down by the Department.

Occupations.—The Indians of this province devote considerable attention to the working of the land. Practically every able-bodied Prince Edward Island Indian of military age has seen overseas service in the Great War, and there is a keen desire among the Indian returned soldiers to acquire land from their less industrious neighbours and to prepare to work it more intelligently and with more energy. Some have devoted themselves to fishing, but the greater part are engaged in the making of baskets and other Indian wares. The principal difficulty encountered by the Indians

in this industry is obtaining the raw material for the making of baskets. There is no ash for the purpose on the reserves and indeed throughout the entire province there is now only a very limited quantity. Some go to New Brunswick and procure the necessary lumber. An effort is now being made to secure a supply of ash co-operatively for this purpose.

Care of Stock.—They are careful of the animals they have and seem anxious to increase them. They also look after whatever machinery they possess.

MANITOBA.

Agencies.—The following agencies are included in the province of Manitoba: Fisher River, Clandeboye, Norway House, Griswold, Portage la Prairie and Manitowapah, Pas and Birtle.

Tribal Origin.—The majority of the Indians of Manitoba belong to the Ojibwa race, which is of Algonkin stock. Bands of Swampy Crees are found at the Norway House and Fisher River agencies and in the York Factory district; these are also of Algonkin stock. The Indians located at the Griswold agency are Sioux; there are also Sioux at the Birtle and Portage la Prairie agencies. There is a band of Chipewyans at Fort Churchill; this tribe is of Athapascan stock.

Occupations.—Grain-growing is the principal occupation of the Indians at the Birtle, Griswold and Portage la Prairie agencies. Those at the Clandeboye, Fisher River, Norway House, Pas and Manitowapah agencies and throughout the northern districts still obtain their livelihood chiefly from hunting and fishing. The hunting and fishing Indians have not suffered from the increased cost of living, as the value of fish and fur has on an average since the beginning of the war been about double that during the five years prior to the war. These Indians are expert guides and canoemen and many of them find employment at this work, for which they receive good wages.

In the more settled districts many of the young men receive high wages as farm labourers. Some also are employed at road-work, in mines and on railway construction, and in most cases their services have been found very satisfactory by their employers. Some of the more educated Indians work as clerks for traders and merchants and most of them have proved to be very efficient in their work. They are not as successful, however, when they undertake to trade independently, owing to their tendency to give credit to excess.

The Indian women on many of the reserves in Manitoba engage in making beadwork moccasins, in weaving mats from rushes, in making toy canoes, rogans, willow baskets, rag and straw mats, and other articles from birch bark, ornamented with beads or porcupine quills. They also engage in picking wild berries for the summer market, gathering wild rice in the fall of the year, gathering senega root, in mending and making fish nets, and in making clothes for themselves and their families. Some of the young women are skilled needle workers and earn a good living by making various kinds of women's wear for the white settlers. The Indian girls who have had a course of training in the boarding schools are much in demand as domestic help. They give increasing satisfaction as the years go by, and reflect credit upon the department's educational work. The majority of the bands in the province raise stock.

Statistics of the agricultural operations of the Indians of Manitoba will be found on page 60, Part II, and of their stock holdings on page 68, Part II.

Health and Sanitation.—The Indians of Manitoba in common with other sections of the population suffered very severely from the epidemic of influenza, and the mortality among them as a result of this cause was high. The department's medical officers and the agency staffs spared no effort in their efficient and energetic efforts to

prevent the spread of the disease. Unfortunately it was impossible to secure adequate medical attention for the Indians living in the more outlying parts, a circumstance which is not remarkable in view of the fact that a similar situation existed in the majority of the white communities throughout the Dominion.

The officers of the department avail themselves of every opportunity to make the Indians realize the value of hygiene and sanitation, and there is a gradual improvement among them from year to year in these respects, which is particularly observable in the more cleanly condition of their houses.

Dwellings.—Indian houses in Manitoba are for the most part of log construction. These Indians are usually expert axemen, and for that reason their primitive homes are generally well constructed and are, as a rule, warm during the winter. On some of the reserves located near the more settled parts of the province quite a number of our Indians have built a better class of house. This improvement is increasing from year to year. In the northern districts the houses are still of a very primitive type, usually comprising a log wall with a roof made of poles and covered with mud, a floor of bark and brush, and an open fireplace, and only one room.

SASKATCHEWAN.

Agencies.—The following agencies are included in the province of Saskatchewan: Assiniboine, Battleford, Carlton, Crooked Lake, Duck Lake, Moose Mountain, Onion Lake, Pelly, Qu'Appelle, and Touchwood Hills.

Tribal origin.—The most numerous tribes among the Saskatchewan Indians are the Ojibwas, Swampy Crees and Plain Crees, which belong to the great Algonkin stock. In addition to these, Sioux Indians are found at the Assiniboine, Moose Mountain, Qu'Appelle and Carlton agencies, and on the Moose Woods reserve. In the Onion Lake agency there is a band of Chipewyans, who are of Athapascan stock. There are also a few Chipewyan Indians in the Isle a la Crosse district.

Industries and Occupations.—Farming and stock-raising are the chief occupations of the Indians of Saskatchewan. In the more unsettled districts, however, many of them still obtain a livelihood from hunting and fishing. Others derive an income from the sale of wood, pickets, senega root, etc. The hunting Indians had a very exceptional year and received very high prices for the catch of fur.

Nearly all the farming Indians are well provided with modern machinery, and implements, and in most cases these are well cared for.

The great majority of the bands in the province own herds of horses and cattle. As a general rule the Indians take good care of their stock, and some of it is of exceptionally fine quality.

Statistics of their agricultural operations will be found on page 62, Part II, and of their stock holdings on page 70, Part II.

Health and Sanitation.—There was a very heavy mortality among the Indians of Saskatchewan as a result of the epidemic of influenza, which was prevalent on practically all the reserves in the province. Very few of the Indians escaped this malady, and many of them have been left in a very delicate state of health as a result thereof. In some localities it was accompanied by a form of bronchial pneumonia of a virulent nature. The department's medical officers and the agency staffs spared no effort in their efficient and energetic efforts to prevent the spread of the disease. Unfortunately it was impossible to secure adequate medical attention for the Indians living in the more outlying parts, a circumstance which is not remarkable in view of the fact that a similar situation existed in the majority of the white communities throughout the Dominion. Apart from the ravages of influenza, the general health of the reserves

in Saskatchewan has been steadily improving from year to year. This improvement is to be noted in the gradual decrease in the number of cases of scrofula and tuberculosis and may be attributed in large measure to better food, greater personal cleanliness and a better understanding and observation of sanitary precautions.

Dwellings.—The great majority of the Indian dwellings in this province are of log construction. In the more settled districts they are usually two storied, shingle-roofed and well built. On the reserves which are farther removed from the centres of civilization the old style one or two-roomed, mud or thatched-roof shacks of a very primitive type still predominate. Many of the Indians live in tents in summer. Some of the more progressive Indians are beginning to erect frame houses.

ALBERTA.

Agencies.—The following agencies are included in the province of Alberta: Blackfoot, Blood, Edmonton, Hobbema, Peigan, Saddle Lake, Sarcee, Stony, and Lesser Slave Lake.

Tribal Origin.—The Alberta Indians are of Algonkin stock, with the exception of the Sarcees near Calgary and the Beavers and Slaves in the Lesser Slave Lake agency, who are Athapascan, the St. Paul's band in the Edmonton Agency, who are Iroquoian, and the Stonies, who are of Siouan stock. The Algonkin Indians of Alberta are subdivided into the Blackfoot nation, comprising the Indians of the Blackfoot, Blood and Peigan agencies, Plain Crees found in the Lesser Slave Lake, Saddle Lake and Hobbema agencies, and a band of Ojibwas at Moberley Lake, in the Lesser Slave Lake agency.

Industries and Occupations.—The principal occupations of the Alberta Indians are farming and stock-raising in the settled parts of the province. In the more remote northern districts they continue to gain their livelihood almost entirely by hunting, fishing and trapping. Many of the Indians have found profitable employment during the past year working for white settlers, farmers and ranchers, from whom they received high wages.

An account of the activities on the reserves in Alberta in connection with the greater production campaign will be found on page 9.

Practically all the bands in the province own herds of horses and cattle, and their stock is of a very fine quality. The Blood Indians have the largest herds, comprising upwards of 4,000 head of the finest beef cattle in the West. The Indians, as a general rule, care for their stock well.

Detailed statistics with regard to the stock held by the Indians of Alberta will be found on page 68, Part II. of this report.

The Indian farmers are well supplied with modern machinery and implements, except in the Stony and Lesser Slave Lake agencies, where little farming is done.

Statistics of the grain and root production will be found on page 60, Part II.

Health and Sanitation.—The Indians of Alberta in common with other sections of the population suffered severely from the epidemic of influenza. The department's medical officers and the agency staffs spared no effort in their efficient and energetic efforts to prevent the spread of the disease. Unfortunately it was impossible to secure adequate medical attention for the Indians living in the more outlying parts, a circumstance which is not remarkable in view of the fact that a similar situation existed in the majority of the white communities throughout the Dominion.

During the summer of 1918 an epidemic of small-pox broke out among the Indians of the Hobbema agency, but the disease was effectively checked by quarantine and

vaccination, and only two deaths resulted from it. There has been an improvement in the number of cases of tuberculosis and scrofula among these Indians, and sanitary precautions are being practised more carefully by them.

Dwellings.—With the exception of those living in the more remote northern districts, the great majority of the Indians of Alberta have modern frame houses, which in many cases are well built, well lighted, and well ventilated. Many of them have good barns, implements sheds and stables. Some of the Indians still live in tents and tepees in summer.

NORTHWEST TERRITORIES.

Agencies.—The department has only two agencies in the Northwest Territories one being located at Simpson, and the other at Fort Smith.

Tribal Origin.—The principal tribes found in the far north are the Slaves, Hares, Loucheux, Secanies, Dogribs, Yellow-knives, Chipewyans and Caribou Eaters. All these tribes are of Athapascan stock. There are a few Crees in the neighbourhood of Chipewyan. These are of Algonkin stock. The most northerly tribes are the Tukudah, who extend to the Mackenzie Delta, and the Copper Mines, who are located along the Copper Mine river. The territory occupied by these two last mentioned tribes is contiguous to that inhabited by the Eskimos.

Occupations.—These Indians are solely dependent upon fishing and hunting. In view of their nomadic mode of life it is difficult to induce them to take up agricultural pursuits, and they do no farming or gardening, with the exception of a few living in the vicinity of the forts, who raise some potatoes. In the summer some of the Indians are employed as pilots and deckhands on the steamers running on the Peace, Slave, and Mackenzie rivers.

Health and Sanitation.—Tuberculosis and scrofula are the diseases most prevalent among the Indians of the Far North. Those who live in tents throughout the year are generally in better health than those who spend the winter in houses.

Every effort is being made by the officers of the department to make these Indians realize the value of hygiene and sanitation, but it is difficult to instruct them in these matters, as they are still in a very primitive stage of development.

Dwellings.—The majority of the northern Indians live in bark or skin tepees all the year round. Those who live in the vicinity of the posts have houses of a primitive type.

YUKON TERRITORY.

Tribal Origin.—The Rampart House, Forty Mile, Blackstone, and Moosehide bands, known as the Hunkutchin or Big River Indians, belong to the Takudah tribe. There is a band of Slavies at Lancing creek who migrated from Fort Good Hope, on the Mackenzie river; another band of Slavies, called Nahanies, is located at the headwaters of the Pelly river. All the above mentioned Indians are of Athabascan stock. At Mayo, Selkirk, Little Salmon, and Carmacks there are bands belonging to the tribe known as the Stick Indians. Bands belonging to the Tlingit tribe are found at Whitehorse, Teslin Lake, Champagne Landing, and Carcross.

Occupations.—Hunting, fishing, and trapping are the chief occupations of all the bands in the Yukon. In summer some of the younger men work as deckhands on the steamboats. A few work on the land for the local market gardners; others cut cordwood and raft logs, and occasionally act as packers.

Efforts have been made to interest these Indians in gardening. At one or two centres they have been induced to raise potatoes with a fair measure of success; they

are born hunters and look upon that occupation as naturally belonging to them, hence their disinterestedness in gardening. Another factor is the importance of laying up a store of dried fish for themselves and their dogs for winter use during the salmon season, which occurs just at the time when the raising of crops would demand their undivided attention; this, in no small measure, accounts for their apparent neglect of gardening. The fishing is decidedly the more profitable of the two for them.

Quite a few of these Indians earn a good living; they are industrious and independent.

Health and Sanitation.—The general health of all the bands may be said to have been good during the past year. A little more attention is being paid to sanitation, though there is much room for improvement in many cases in this important matter. However, we hope by constant endeavour to increase the improvement. They are slowly learning the value of cleanliness, both personal and in their homes. All bands have been free from epidemics during the year. The Territory is, up to date, free from the Spanish influenza; strict precautionary measures have been adopted and are still in force owing to the prevalence of the epidemic in the neighbouring territory.

Dwellings.—There is little change to report regarding the Indian villages which usually consist of a number of small log cabins. Some of the older cabins are gradually being torn down and large and better ones taking their place, the construction of the new cabins is of a better order, more light and ventilation being provided for; some are being divided into rooms and the interiors decorated, rather crudely perhaps, but it is a step in the right direction. In most of the villages there are school houses and small churches, which as a rule are well built and kept in good repair.

BRITISH COLUMBIA.

Agencies.—The following agencies are included in the province of British Columbia: Babine and Upper Skeena, Bella Coola, Cowichan, Kamloops, Kootenay, Kwawkewlth, Lytton, Nass, New Westminster, Okanagan, Queen Charlotte, Stikine, Stuart Lake, West Coast, and Williams Lake.

Tribal Origin.—The Indians of the Bella Coola, Cowichan, Kamloops, Lytton, New Westminster, and Okanagan agencies belong to the Salish tribe. The Kootenay tribe is located in the agency of the same name. The Kwakiutl-Nootka tribe is located in the Kwawkewlth and West Coast agencies; the Haidas, in the Queen Charlotte Islands; the Tlingits, in the Stikine; and the Tsimshians, in the Naas ageney. The Indians of the Babine, Stuart Lake and Williams Lake agencies belong to the Athapascan race.

In addition to these there are about 3,000 nomadic Indians in the province who cannot be correctly classified according to linguistic stock or tribal origin.

Industries and Occupations.—The principal occupation of the Indians living on the coast is fishing, at which they have had a very successful year. Many of these Indian fishermen have gasolene launches, which they often construct themselves with great skill and efficiency. The Haida Indians of the Queen Charlotte islands are particularly proficient and are considered to be among the best fishermen on the Pacific coast. Many Indians, including a large number of women, are employed in the canneries. The occupations of the coast Indians also include logging, teaming, boat-building, and hunting.

Hop-picking is an important source of revenue to the Indians of the Kamloops, Lytton, Cowichan, West Coast, and New Westminster agencies.

The Indians of the Lytton, Kamloops, Kootenay, Okanagan, and New Westminster agencies engage in farming, including the raising of grains, fruit and vege-

tables of all kinds. Marked progress has of late years characterized their agricultural efforts. They are well supplied with farm machinery and equipment, of which they take good care.

The Indians of the Kamloops, Kootenay, New Westminster and Okanagan agencies raise horses and cattle. They take good care of their stock, and are meeting with marked success in this industry. The Indians of the Kamloops agency own about 5,000 horses and about 2,000 head of cattle.

The Indians of the more remote northern districts still derive a livelihood from hunting and trapping.

Notwithstanding a few more or less serious unexpected setbacks and hindrances, the progress made by Indians of the various agencies of the interior of British Columbia during the past year has been most encouraging. The outstanding feature marking that progress was the increased acreage under crop. While this applied to all the agencies, it was, perhaps, more marked in the Kamloops and Lytton agencies, and in a few bands of the Okanagan agency. Prices of farm produce on the whole have been exceedingly favourable, and with the single exception of a drop in the price of beans, which affected the Lytton agency more than all others, there has been a great opportunity for industrious Indians to better their position. Not only were the Lytton Indians seriously handicapped by this fall in the price of beans, but a destructive frost made re-seeding necessary in a number of cases, and this made the crop so late that there was difficulty in saving it. Where mixed farming obtains, the failure or lessening in the price of any particular kind of crop does not have so serious an effect, but in parts of the Lytton agency beans are about the only crop that can be raised.

In the Stuart Lake agency it is gratifying to note the interest created among the Indians because of the well-bred bulls supplied by the department, and the superior quality of calves which have resulted. So marked has this been that white farmers are offering the Indians tempting prices for the calves, but care is being taken to warn them against selling and in no case to part with a heifer calf sired by one of these bulls. Most of these Indians are also being induced to keep hogs, and a few more have attempted dairying.

The prevailing wage paid for farm labourers and for work in the saw-mills and logging camps was higher than at any time previous and this induced many able-bodied Indians to leave their land and work for others.

The fishing season in the Fraser river was unsuccessful and those engaged in this work were barely able to cover their expenses. The Indian fishermen on the sea coast had a good season. Their fishing season was prolonged, and the cheaper grades of salmon which are usually in little demand were eagerly sought after by the canneries and abnormal prices were paid for fish. The result was that these Indians all made large earnings. Some of them have invested their earnings in larger gasolene boats and some have built new cottages for themselves.

In the lumbering industry wages were exceptionally high, and the Indians engaged in that work earned from five to eight dollars per day.

Health and Sanitation.—The most serious setback to the health of the Indians of British Columbia during the year was the epidemic of Spanish influenza which was particularly severe in the Kamloops and Lytton bands, the former having a death-roll of 194 up to the first week in December, 1918, and the latter of over 100 in the months of October and November. The disease was particularly hard on the aged and those of weak lungs. Several chiefs were among the victims. Industrially it interfered with the saving of the root crops, and in several instances fields of potatoes were left with the tubers in the ground, because so many were sick that there were none left who were well enough to dig them. Much more fall ploughing would also have been done but for influenza and its after effects. Where it was possible the patients were at once removed to the hospitals for treatment, and in cases where the sick remained at their

homes the medical officers of the department rendered every assistance possible. In isolated localities where medical aid could not be obtained, the agent or constable visited the sick, and under the directions of the medical officers arranged for their care and supplied them with the necessary medicines. Pneumonia which frequently accompanied the influenza was the immediate cause of death in many cases. Many of those who succumbed were suffering from tubercular trouble or some other chronic disease. In other respects the general health of the Indians of British Columbia has been normal.

The agents in all parts of the province report a constant improvement from year to year in sanitary conditions on the reserves, and the department is making every effort to educate the Indians in this respect.

Dwellings.—The great majority of the British Columbia Indians, except in the more outlying districts, now have modern, well-built, comfortable houses either of log or frame construction. This is an evidence of rapid progress, as a few years ago nearly all of them lived either in wretched little shacks, or herded together in the large barnlike, unventilated and unsanitary structures, which are still in use in some of the more unsettled parts of the coast. The Haida Indians of the Queen Charlotte islands, who are remarkably progressive, build up-to-date frame houses that will compare favourably with those found in the average white community.

FINANCIAL.

At the close of the twelve months ended March 31, 1919, the capital of the Indian Trust Fund, which at the end of the preceding year amounted to $8,665,137.35, had increased to $9,238,786.67.

The amounts expended from the Consolidated Revenue Fund were as follows: voted by Parliament for the purposes of the department, $2,038,499.24; and annuities by statute, $184,471.

On March 31, last, the balance to the credit of the Indian Savings Account for the funding of the annuities and earnings of pupils at industrial schools, together with collections from Indians for purchases of stock and for ranching and farming expenses, was $66,870.42. Deposits and interest during the twelve months aggregated $62,293.14, and withdrawals $50,942.21.

The comparative statement hereto appended of expenditure covering the fiscal years from 1914-15 to 1918-19 inclusive, as well as the estimated expenditure for 1919-20, which includes the supplementary estimates, hereinafter shown, demonstrates the economy that has characterized the Department's administration.

The expenditure, not including Indian education in 1914-15 was $1,211,288.62, and during the fiscal year just closed it was only $1,051,292.31, which includes the cost of the influenza epidemic, which amounted to $87,320. Had this epidemic not occurred, our expenditure last year would have been only $963,972 as compared with $1,211,288 in 1914-15, a reduction of $267,316. As it is, it has been $159,996. This reduction in the expenditure is all the more remarkable when the extra cost of the barest necessities is taken into consideration. Prices of such supplies as meats, provisions, clothing, ammunition and twine, seed, drugs, live stock, etc., have risen at least 100 per cent and in some cases even higher. Contracts for supplies at Winnipeg and in Treaties Nos. 8 and 10 have doubled and the cost of all services has increased considerably. The salaries of many officials in the Outside Service have been increased.

Indian Education.—The expenditure in 1914-15 was $2,195,319.20 and last fiscal year it was $1,786,797.21, a reduction of $408,521.99, notwithstanding the fact that the grants have been increased.

NOTE.—The estimated figures for 1919-20 include the Supplementary Estimates.

	Expenditure.					Estimate.
	1914-15.	1915-16.	1916-17.	1917-18.	1918-19.	1919-20.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Prince Edward Island	3,757 92	2,919 95	2,788 87	3,224 86	3,215 79	3,225 00
Nova Scotia	22,801 15	28,599 19	28,314 82	28,161 91	24,298 45	28,300 00
New Brunswick	16,428 58	16,283 56	16,277 65	16,883 00	18,282 83	19,284 00
Ontario and Quebec	111,713 26	105,923 26	82,139 37	91,763 00	81,653 68	99,475 00
Manitoba, Sask., Alta and N.W.T.	646,145 97	558,054 87	558,108 30	558,148 28	535,899 26	556,414 00
British Columbia	243,240 46	222,201 30	187,011 64	166,049 46	175,239 02	176,050 00
Yukon	21,493 54	17,734 86	17,623 22	14,354 00	14,703 90	15,000 00
General	145,707 74	117,547 29	122,999 55	122,997 52	197,999 38	128,000 00
Total	1,211,288 62	1,069,264 28	1,015,263 42	1,001,582 03	1,051,292 31	1,025,748 00
Indian Education	984,030 58	911,377 89	733,768 09	734,112 53	735,504 90	1,064,415 00
Grand total	2,195,319 20	1,980,642 17	1,749,031 51	1,735,694 36	1,786,797 21	2,090,163 00

I have the honour to be, sir,

Your obedient servant,

DUNCAN C. SCOTT,

Deputy Superintendent General of Indian Affairs.

PART II

TABULAR STATEMENTS

TABLE No. 1.—RECAPITULATION:—CENSUS OF INDIANS AND ESKIMOS.

Arranged under Departmental Inspectorates and Districts.

Inspectors and Districts.	Religion.								Under 6 years.		From 6 to 15 inclusive.		From 16 to 20 inclusive.		From 21 to 65 inclusive.		From 65 upwards.		Change in population.		Cause of increase.		Cause of decrease.	
	Number in Band.	Anglican.	Baptist.	Methodist.	Presbyterian.	Roman Catholic.	Other Christian Beliefs.	Aboriginal Beliefs.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Increase.	Decrease.	Births.	Migration.	Deaths.	Migration.
Alberta	5,598	809	.....	1,548	.....	2,203	..	1,038	562	593	581	532	303	301	1,282	1,260	62	122	90	23	216	38	167	20
British Columbia	24,744	4,492	.	3,075	585	12,389	369	1,334	1,949	1,900	2,099	2,075	1,302	1,304	5,297	5,190	521	557	303	301	603	136	643	103
Manitoba	14,827	4,919	110	3,128	603	2,408	423	2,831	1,336	1,397	1,580	1,424	1,011	958	2,749	3,090	384	493	205	162	534	391	455	337
New Brunswick	1,846	.....	.....	.....	.....	1,846	.....	.....	145	147	161	156	70	57	327	306	51	35	35	63	67	37	70	62
Nova Scotia	2,031	14	10	.....	.....	2,006	1	.....	178	217	209	187	134	433	399	79	79	70	19	107	46	22	65	91
Ontario	20,969	5,597	1,177	4,543	12	6,321	519	1,225	1,523	1,552	1,849	1,806	1,395	1,283	4,506	4,612	422	446	225	152	450	296	456	217
Prince Edward Island	292	.....	.....	.....	.....	292	.....	.....	20	30	33	28	19	17	65	58	14	8	.....	10	.....	.....	.....	10
Quebec	13,366	119	.....	452	6	8,655	20	.....	974	1,021	894	910	576	542	1,934	1,930	247	224	88	70	230	112	209	124
Saskatchewan	7,764	1,885	.....	74	949	3,008	94	1,630	833	802	799	746	348	368	1,553	1,659	220	312	214	66	350	182	282	102
Isle a la Crosse District	1,999	688	.....	.....	.....	1,311	.....	.....	207	226	222	234	89	93	395	484	15	34	35	6	74	70	46	69
Treaty No. 8 Inspectorate	4,821	438	.....	.....	.....	1,654	.....	356	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	206	88	164	282	130	198
Treaty No. 9 Inspectorate	2,634	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	74	.....	119	95	63	77
Northwest Territories	3,579	307	.....	.....	.....	1,793	.....	.....	178	164	259	253	96	87	462	486	57	58	.....	.....	.....	.....	.....	.....
Yukon	1,528	915	.....	.....	.....	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total Indian Population	105,998	20,183	1,297	12,820	2,155	43,986	1,426	8,414	7,905	8,049	8,677	8,351	5,345	5,144	19,003	19,472	2,072	2,359	1,494	1,048	2,853	1,571	2,568	1,410
Baffin Land— ESKIMOS.																								
Hudson Strait	471	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Frobisher Bay	63	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cape Haven	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Blacklead Island	134	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Keckerton Island	126	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Home Bay	99	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pond Inlet	140	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Admiralty Inlet	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	1,987	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mainland—																								
Port Burwell	109	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ungava Bay	500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hudson Strait	300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hudson Bay (east side)	200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hudson Bay (west side) including Chesterfield inlet	500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

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RECAPITULATION:—CENSUS OF INDIANS AND ESKIMOS.

Arranged under Provinces and Districts.

Provinces.	Religion.								Under 6 years.		From 6 to 15 inclusive.		From 16 to 20 inclusive.		From 21 to 65 inclusive.		From 65 upwards.		Change in population.		Cause of increase.		Cause of decrease.	
	Number.	Anglican.	Baptist.	Methodist.	Presbyterian.	Roman Catholic.	Other Christian Beliefs.	Aboriginal Beliefs.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Increase.	Decrease.	Births.	Migration.	Deaths.	Migration.
Alberta	8,837	1,247	.....	1,548	.....	3,704	.....	1,307	569	602	585	538	306	303	1,292	1,273	62	123	193	38	340	183	252	115
British Columbia	25,694	4,492	.....	3,075	585	13,039	369	1,421	1,993	1,931	2,152	2,132	1,320	1,327	5,389	5,297	528	567	315	357	618	142	641	162
Manitoba	11,583	3,636	110	3,128	592	1,919	423	1,370	1,074	1,124	1,181	1,048	861	794	2,071	2,307	321	397	.....	352	406	.....	337	421
New Brunswick	1,846	.....	.....	.....	.....	1,846	.....	.....	115	147	101	156	70	57	327	309	51	35	35	63	67	37	70	62
Nova Scotia	2,031	14	10	.....	.....	2,006	1	.....	178	217	200	187	136	134	433	397	79	70	19	107	46	22	65	91
Ontario	26,411	6,469	1,177	4,543	23	6,785	519	2,686	1,743	1,783	2,212	2,143	1,512	1,416	5,107	5,292	470	524	339	230	673	476	623	420
Prince Edward Island	292	.....	.....	.....	.....	292	.....	.....	20	30	33	28	19	17	65	58	14	8	.....	10	.....	.....	.....	10
Quebec	13,366	119	.....	452	6	8,655	20	.....	974	1,021	894	910	576	542	1,934	1,930	247	224	88	70	230	112	200	124
Saskatchewan	10,646	2,984	.....	74	949	4,289	94	1,630	1,075	1,061	1,053	1,013	467	490	2,015	2,233	250	363	084	.....	458	578	352	.....
Northwest Territories	3,764	307	.....	.....	.....	1,351	.....	.....	134	133	206	196	78	64	370	79	50	48	12	17	15	36	25	31
Yukon	1,528	915	.....	.....	.....	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total Indian Population	105,998	20,183	1,297	12,820	2,155	43,986	1,426	8,414	7,905	8,049	8,677	8,351	5,345	5,144	19,003	19,472	2,072	2,359	1,681	1,244	2,853	1,586	2,566	1,436
ESKIMOS.																								
Baffin Land—																								
Hudson Strait	471	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Frobisher Bay	63	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cape Haven	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Blacklead Island	134	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Keckerton Island	126	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Home Bay	90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pond Inlet	140	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Admiralty Inlet	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	1,087	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mainland—																								
Port Burwell	109	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ungava Bay	500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hudson Strait	300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hudson Bay (east side)	200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

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TABLE No. 2.—GRAIN, VEGETABLE AND ROOT PRODUCTION.

Agencies.	Wheat.		Oats.		Other Grains.		Peas, Beans, etc.		Potatoes.		Other Roots.		Fodder.		
	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Hay Cultivat'd	Hay, Wild.	Other Fodder
													Tons.	Tons.	Tons.
ALBERTA.															
*Blackfoot	3,338	9,756	1,018	381					1	20				6,000	
*Blood	3,100	5,000	560	340	1,120	300			3	350				10,000	300
*Edmonton	261	604	1,841	32,380	686	12,161			61	1,466			543	1,640	567
Hobbema	101	629	2,492	37,688	335	2,822			23	1,240	14	574		5,126	
Lesser Slave Lake	30	535	53	1,735	7	150			49	2,360	10	1,180		2,494	2,973
*Peigan	1,798	114	860						10	248				286	
Saddle Lake	264	2,426	563	10,433	23	325			14	840	8	80		3,395	
Sarcee	75	750	469	1,610	10	150			½	145			25	637	300
Stony									3		10	40	10	1,100	
Total	8,967	19,814	7,856	84,467	2,181	15,908			164½	6,669	42	1,874	578	30,678	4,140
*Drought and frost caused almost complete crop failure.															
BRITISH COLUMBIA.															
*Babine and Upper Skeena			125						490	58,900	86	14,000	520	430	
Bella Coola									14	1,595	6	550	35	200	5
Cowichan	46	1,845	308	13,065			8	205	105	3,400			1,084		
Kamloops	518	12,688	1,008	32,890	87	1,721	425	6,560	773	118,165	643	10,304	7,242	450	496
Kootenay	107	1,605	792						55	3,165	5	235	1,255	1,335	90
Kwawkewlth									4	330					
Lytton	171	3,990	226	5,665	25	745	365	14,200	172	37,845			1,015	28	
Nass		10							296	21,500		233		33	
New Westminster	28	1,170	349	19,020	55	2,040	98	3,112	272	46,010	68	9,605	786	327	242
Okanagan	1,225	9,500	1,500	19,000	2	40	45	550	300	5,000	40	950	2,500	750	550
Queen Charlotte									9	450	5	250	5	5	6
Stikine									1	15				22	
Stuart Lake			305	4,190	6	240			48	5,245	19½	2,515	199	1,025	319
West Coast								7	1¾	118	½	83	1		
Williams Lake	200	4,350	600	17,000					130	8,500	30	2,125	415	1,790	
Total	2,295	35,158	5,213	110,830	175	4,786	941	24,634	2,670¾	310,238	902¾	40,850	15,057	6,395	1,708
*Oats cut for green feed.															
MANITOBA.															
Birtle	1,106	10,928	935	19,317	478	9,735	7	63	19	1,603	4	329		2,081	1,176
Clandeboye		45	25	605		15	20	444	50	7,420		275	100	1,080	
Fisher River	32	383	197	5,224	98	1,933			103	12,100	27	1,045		4,295	
Griswold	1,556	11,166	417	3,914	352	3,547			22	1,900	10	650		680	
Manitowapah	85	1,373	79	1,949	48	901			73	7,028	2	160		4,675	26
Norway House									72	850	2			125	
Pas									90	4,970				825	
Portage la Prairie	2,002	31,896	716	18,857	387	7,657			9	962				741	65
Total	4,781	55,791	2,369	49,866	1,363	23,788	27	507	438	36,833	45	2,459	100	14,502	1,267

NEW BRUNSWICK.															
Northern Division	22	154	64	460	13	82	5	10	168	965	2	105	54	16	
Northeastern	5	70	53	1,380	5	46	8	180	40	2,460	8	631	105	50	25
Southwestern			1½	38	3½	140	¾	19	9	463	½	25	2		
Total	27	224	118½	1,878	21½	268	13¾	209	217	3,888	10½	761	161	66	25
NOVA SCOTIA.															
Annapolis									2	80				3	
Antigonish and Guysboro			15	500			¼	40	10	500	10	70	60	10	10
Cape Breton (Eskasoni)	2½	45	8	175	2	27	2	10	23	245	5	109	85	25	4
Cape Breton (Sydney)															
Colchester			1	30					2½	400	½	100	5		
Cumberland									3	300					
Digby									5	205			7	1	
Halifax			8	260			4	12	16	500	9	650	22	12	3
Hants			5	100	2	40	½	8	5	250	½	30	50	20	
Hants (Windsor)															
Inverness			4	100			½	17	12	500	2	100	108	55	10
Kings			2	60	1	30	1½	4	4	400			15	10	
Lunenburg	½	3	7½	185	9½	135	2	9	20	1,110	9½	563	99	30	
Pictou	1	10	1	10	1	9		3	10	500	7	100		3	
Queens									2	25	2	100			
Richmond	1	15	8	100	2	45	½	5	10	800	½	250	50	7	5
Shelburne						2		5	1	40		15	2		
Victoria			5	76	1	12	1	9	12	280	1	4	190	20	12
Yarmouth															
Total	5	73	66½	1,655	18½	300	14½	122	137	6,135	47	2,091	693	196	44
ONTARIO.															
Alnwick	7	116	38	1,120	82	1,700		7	18	1,090		1,413	71		
Cape Croker	43	800	200	6,000	10	210	11	330	16	900			600		
Caradoc	265	3,572	696	14,272	138	1,802	44	271	121	3,595	15	498	1,285	102	20
Chapleau									11	385					
Christian Island	12	180	30	700	30	250	8	60	30	700			40		
Ft. Frances	47	506	12	384					38	4,400		170	7	182	
Ft. William									28	1,120				16	
Georgina Island	30	565	66	1,820	14	375	15	209	4	324			27	5	30
Golden Lake	15	70	20	150	20	200			7	300	1	50	10	50	
Gore Bay	129	2,118	140	3,950	50	715	22	468	109	6,935	32	1,250	470	5	222
Kenora			2	180	1	35			68	6,320	17	902		350	
Manitowanning	478	9,080	551	18,472	181	3,825	223	2,295	550	22,052	75	5,735	3,393	73	772
Moravian	90	1,375	250	5,000	150	2,250	25	125	50	1,500	12	175	275	10	25
New Credit	66	1,203	560	16,605	120	3,275	5	65	15	1,325	10	1,176	751		650
Parry Sound			17	1,015	7	140	5	90	36	625	9	315	380	55	
Rama	10	200	100	4,000			14	350	40	1,600	9	750	80	30	80
Rice Lake	75	1,800	255	7,400	36	805	11	120	41	2,600	18	7,500	250	15	65
Sarnia	300	3,600	600	12,500	330	4,900	98	826	63	3,733	9	477	70	696	72
Saugeen	70	1,200	200	5,000	40	500	15	30	30	1,250	10	400	150	6	150
Sault Ste Marie	33	479	83	2,332			10	157	98	6,204	15	720	80	90	
Savanne					1	46			41	3,202	11	406		74	
Scugog	12	180	42	630	15	180	14	168	6	360			14	5	
Six Nations	560	1,960	7,021	215,640	2,100	34,000	75	910	340	9,560	1,150	10,980	16,500		7,500
Sturgeon Falls	12	360	32	960	7	200	5	130	19	1,900	6	210	50	55	
Thessalon	21	415	59	2,040	13	570	22	495	73	3,800	8	486	61	71	23
Tyendinaga	219	4,761	876	28,585	350	10,500	23	464	120	4,750	4	300	2,000	100	3,100
Wapole Island*															
Total	2,494	35,140	11,850	348,755	3,095	66,478	645	7,880	1,972	90,530	1,411	33,913	26,564	1,996	12,709

*Amalgamated with Sarnia Agency.

TABLE No. 2.—GRAIN, VEGETABLE AND ROOT PRODUCTION—*Continued.*

Agencies.	Wheat.		Oats.		Other Grains.		Peas, Beans, etc.		Potatoes.		Other Roots.		Fodder.		
	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Hay Cultivat'd	Hay, Wild.	Other Fodder.
													Tons.	Tons.	Tons.
PRINCE EDWARD ISLAND.	5	75	40	540	.....	.....	¼	4	15	1,150	¼	25	55	35	.....
QUEBEC.															
Becancour	3	35	20	360	3	45	½	14	2	80	.....	.....	14	.....	3
Bersimis	1	12	2	30	.....	.....	.....	.....	5	243	.....	.....	6	4	.....
Cacouna	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caughnawaga	90	1,350	1,000	30,000	800	8,000	100	2,000	300	30,000	50	3,000	2,000	40	30
Jeune Lorette	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maniwaki	23	132	160	1,872	3	25	17	121	36	2,304	9	515	168	8	53
Maria	6	58	20	410	1	11	.....	.....	4	180	1	15	15	.....	.....
Mingan	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oka	30	200	250	3,000	25	275	10	140	30	650	4	25	250	10	100
Pierreville	5	25	34	367	30	178	15	125	14	415	.....	.....	50	.....	.....
Pointe Bleue	57	568	550	6,000	200	1,950	50	500	148	3,500	10	160	225	10	130
Ristigouche	26	390	120	5,100	6	230	3	125	80	5,800	6	625	98	5	130
Seven Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Regis	125	2,000	440	6,589	65	624	80	989	318	7,100	40	1,592	379	300	512
Timiskaming	13	115	85	2,125	3	75	3	52	7	942	1	35	83	.....	.....
Total	379	4,885	2,681	55,853	1,136	11,413	328	4,066	944	51,214	121	5,967	3,288	377	958
SASKATCHEWAN.															
Assiniboine	445	5,900	753	10,775	.....	.....	.....	.....	12	1,800	.....	.....	.....	1,845	740
Battleford	986	1,901	1,196	4,450	20	102	.....	.....	23	113	6	128	.....	10,569	496
Carlton	606	5,323	816	5,920	39	188	.....	.....	39	396	12	92	.....	3,786	1,089
Crooked Lake	1,822	28,514	1,054	23,369	57	412	.....	.....	16	2,570	.....	.....	.....	2,112	109
Duck Lake	860	9,500	470	8,100	90	875	.....	.....	15	1,150	.....	.....	.....	4,455	60
File Hills Agency	235	3,253	355	6,027	30	300	.....	.....	8	1,095	8	1,010	.....	1,563	130
File Hills Colony	545	8,891	1,805	34,420	70	768	.....	.....	6	1,000	3	200	.....	300	585
Moose Mountain	812	7,374	299	2,722	.....	.....	.....	.....	6	700	.....	.....	.....	674	660
Moose Woods	35	555	72	935	.....	.....	.....	.....	10	524	.....	.....	.....	1,000	34
Onion Lake	424	1,074	713	9,866	38	132	.....	.....	16	310	3	169	.....	3,193	406
Pelly	43	663	2,177	46,617	111	1,823	.....	.....	11	555	.....	.....	.....	1,956	60
Qu'Appelle	1,774	19,544	1,254	15,379	.....	.....	.....	.....	9	1,151	3½	219	.....	3,103	229
Touchwood	1,104	12,232	1,999	23,992	92	307	.....	.....	9½	1,295	14½	787	.....	3,356	2,797
Wood Mountain	.....	.....	10	.....	.....	.....	3	8	5½	135	2½	17	.....	200	.....
Total	9,691	104,724	12,973	192,572	547	4,907	3	8	185¾	12,791	52¾	2,622	.....	38,172	7,395

TABLE No. 2.—GRAIN VEGETABLE AND ROOT PRODUCTION.—*Concluded.*

RECAPITULATION.

Provinces.	Wheat.		Oats.		Other Grains.		Peas, Beans, etc.		Potatoes.		Other Roots.		Fodder.		
	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Acres Sown.	Bush. Harvested	Hay Cultivat'd	Hay. Wild.	Other Fodder.
													Tons.	Tons.	Tons.
*Alberta	8,967	19,814	7,856	84,467	2,181	15,908	.....	.....	164¼	6,669	42	1,874	578	30,678	4,140
British Columbia	2,295	35,158	5,213	110,830	175	4,786	941	24,634	2,670¼	310,238	902¾	40,850	15,057	6,395	1,708
Manitoba	4,781	55,791	2,309	49,866	1,363	23,788	27	507	438	36,833	45	2,459	100	14,502	1,267
New Brunswick	27	224	118¾	1,878	21¾	268	13¾	209	217	3,888	10¼	761	161	66	25
Nova Scotia	5	73	66¾	1,655	18¾	300	14¾	122	137	6,135	47	2,091	693	196	44
Ontario	2,494	35,140	11,850	348,755	3,695	66,478	645	7,880	1,972	90,530	1,411	33,913	26,564	1,996	12,709
Prince Edward Island	5	75	40	540	.....	.....	¼	4	15	1,150	¼	25	55	35	.....
Quebec	379	4,885	2,681	55,853	1,136	11,413	328	4,006	944	51,214	121	5,967	3,288	377	958
Saskatchewan	9,691	104,724	12,973	192,572	647	4,907	3	8	185¾	12,794	52¾	2,622	.....	38,172	7,395
Total	28,044	255,884	43,167	846,416	9,137	127,848	1,972¼	37,430	6,744	519,451	2,632¼	90,562	46,496	92,417	28,246

*Drought and frost caused almost complete failure in wheat crop.

Table No. 3.—LAND: PRIVATE AND PUBLIC BUILDINGS AND PROPERTY.

Agencies.	Total Area of Reserve. Acres.	Acres Under wood.	Acres Cleared but not Cultivated.	Acres Under actual Cultivation.	Acres Fenced.	Private Property.							Public Property.					
						Stone, Brick and Frame Dwellings.	Other Dwellings.	Outbuildings, etc.	Ploughs, Harrows, Drills, etc.	Mowers, Reapers, Binders, Threshers, etc.	Carts, Wagons and Vehicles.	Tools and smaller Implements.	Churches.	Council Houses.	School Houses.	Saw Mills.	Other Buildings.	Engines and Machinery.
Alberta.																		
Blackfoot	175,580	3,300	149,559	22,721	26,960	74	100	410	188	261	475	310	....	....	....	....	10	232
Blood	354,086	4,760	334,511	14,815	37,400	45	240	340	230	300	540	2,000	....	2	2	....	18	245
Edmonton	82,101	33,431	45,153	3,517	10,917	33	99	164	156	128	211	1,295	2	....	2	1	9	3
Hobbema	78,980	75,771	244	2,965	24,560	5	158	241	215	209	414	918	....	....	....	....	....	....
Lesser Slave Lake	251,418	150,684	100,586	148	1,172	.....	206	350	61	51	212	667	1	....	....	....	....	....
Peigan	93,142	700	88,535	3,907	15,450	20	64	82	152	47	159	820	....	1	....	....	13	48
Saddle Lake	117,221	37,154	79,230	837	68,216	2	197	239	125	119	280	601	....	....	2	....	....	....
Sarcee	69,120	40,000	28,348	772	69,120	39	5	34	52	48	125	250	2	1	1	....	2	8
Stony	88,258	40,000	48,208	50	11,000	10	131	90	51	67	250	500	....	3	....	....	....	....
Total	1,309,906	385,800	874,374	49,732	264,795	228	1,200	1,950	1,230	1,230	2,666	7,361	5	7	7	1	52	536
British Columbia.																		
Babine and Upper Skeena	30,363	20,923	8,204	1,236	1,137	459	395	520	47	38	175	5,020	....	1	....	3	2	....
Bella Coola	22,661	22,368	208	85	1,317	317	164	256	23	12	45	655	7	6	6	....	1	....
Cowichan	19,920	11,125	5,406	3,389	5,579	609	32	302	315	124	441	4,890	4	....	7	....	....	....
Kamloops	171,064	87,680	75,130	8,254	106,358	252	320	674	1,166	459	631	330	16	4	3	....	....	4
Kootenay	42,316	2,320	38,208	1,788	2,157	47	149	190	230	56	210	335	5	....	1	....	....	....
Kwawkewlth	16,498	15,969	507	22	30	134	173	100	.....	.....	.....	2,150	....	....	3	....	....	1
Lytton	54,481	32,445	18,719	3,317	5,406	442	337	532	489	125	382	1,000	37	5	2	....	....	4
Nass	63,004	62,392	320	292	204	495	63	97	.....	.....	.....	500	12	5	6	3	22	3
New Westminster	41,075	33,644	4,246	3,185	3,901	621	281	768	154	30	105	2,011	29	5	5	....	....	....
Okanagan	147,339	51,038	85,231	11,070	29,500	84	126	464	430	174	480	1,000	8	5	1	....	....	1
Queen Charlotte	3,484	2,074	1,392	18	21	155	52	57	1	.....	2	425	4	2	2	....	4	....
Stikine	415	15	399	1	1	11	98	.....	.....	.....	7	2,058	....	....	....	....	....	....
Stuart Lake	34,714	29,491	4,559	664	2,789	43	254	330	49	41	122	2,440	16	1	....	....	5	....
West Coast	12,364	11,897	372	95	147	384	217	6	3	.....	13	230	7	....	6	....	....	....
Williams Lake	66,618	49,776	15,326	1,516	9,450	20	290	342	211	112	193	1,000	13	....	....	2	23	2
Total	726,316	433,157	258,227	34,932	167,997	4,073	2,951	4,638	3,118	1,171	2,806	24,044	158	34	42	8	57	15
Manitoba.																		
Birtle	52,809	31,213	17,930	3,666	10,586	18	110	229	217	141	384	1,360	3	....	1	....	2	3
Clandeboye	39,784	29,790	9,681	313	313	5	217	91	40	8	33	250	5	....	5	....	4	....
Fisher River	93,446	92,532	457	457	3,669	30	227	245	69	84	151	250	2	1	4	....	10	....
Griswold	12,294	900	7,276	4,118	1,376	38	67	145	186	108	267	508	2	....	1	....	5	2
Manitowapah	81,429	40,413	40,571	445	2,538	3	351	533	94	133	492	1,305	10	....	10	....	9	....
Norway House	26,208	20,582	5,555	71	61	.....	435	20	7	.....	.....	460	6	....	3	....	2	....

Pas	54,864	44,636	10,137	91	200	31	324	142	13	16	25	350	8	....	5	1	7	....
Portage la Prairie*	22,452	3,800	15,248	3,404	3,770	.....	116	161	79	74	192	415	1	1	2	...	9	3
Total	383,286	263,866	106,865	12,665	22,422	125	1,847	1,566	695	564	1,544	4,898	37	2	31	1	48	8

*3,838 acres surrendered 1918 on Long Lake Reserve.

New Brunswick.

Northern Division	6,511	6,071	240	200	230	54	3	25	10	4	20	65	1	1	2	...	1	....
Northeastern	32,160	31,018	535	607	900	211	35	132	70	22	119	525	6	3	5	....	6	....
Southwestern	1,042	945	80	17	67	56	....	26	5	.....	10	350	...	2	4	.....	.....	....
Total	39,713	38,034	865	824	1,197	321	38	183	85	26	149	940	7	6	11	...	7	....

Nova Scotia.

Annapolis	400	395	3	2	5	....	15	2	.....	.....	.....	25	.....	.....	.....	.....	.....	.....
Antigonish and Guysboro	970	715	200	55	200	43	10	20	8	.....	7	125	1	....	1	.....	.....	....
Cape Breton (Eskasoni)	2,805	2,000	205	600	707	24	.....	21	13	6	25	600	1	....	1	.....	.....	....
Cape Breton (Sydney)	689	687	2	.....	2	25	.....	.....	.....	.....	.....	50	.....	.....	1	.....	.....	....
Colchester	165	120	20	15	15	20	6	4	.....	.....	7	25	1	....	1	.....	.....	....
Cumberland	1,000	995	1	4	.....	6	.....	3	1	.....	1	200	.....	.....	.....	.....	.....	....
Digby	1,600	1,321	225	54	150	22	.....	4	.....	.....	.....	50	1	....	1	..	1	..
Halifax	234	119	9	106	109	18	4	.....	2	.....	3	100	.....	.....	.....	.....	.....	..
Hants	3,250	2,852	300	98	98	15	2	19	10	3	16	200	1	..	1	...	1	.
Hants (Windsor)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100	.....	.....	.....	.....	.....	.....
Inverness	2,755	1,949	326	480	550	34	1	19	16	4	12	120	1	1	2	.....	.....	.....
Kings	450	400	40	10	.....	17	.....	4	2	1	4	100	.....	.....	.....	.....	.....	1
Lunenburg	2,000	1,398	390	212	320	19	11	24	16	2	34	128	.....	.....	1	....	1	....
Pictou	320	175	120	25	100	31	.....	.....	4	.....	8	100	1	.....	1	.....	.....	.....
Queens	1,000	600	200	200	100	16	1	5	2	1	5	150	.....	.....	.....	.....	.....	.....
Richmond	12,81	850	230	201	215	26	6	18	22	2	30	250	1	1	1	...	3	....
Shelburne	.....	.....	.....	.....	.....	8	2	2	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Victoria	796	520	216	60	75	18	1	9	7	1	14	100	.....	.....	1	....	3	....
Yarmouth	21	12	5	4	.....	.....	2	1	.....	.....	.....	50	.....	.....	.....	.....	.....	.....
Total	19,696	15,078	2,492	2,126	2,646	342	61	155	103	20	166	2,473	8	2	12	....	9	1

Ontario.

Alnwick	3,576	900	125	2,550	2,800	40	2	58	51	22	140	85	1	1	1	...	1	....
Cape Croker	15,686	12,000	2,500	1,086	1,216	34	48	70	60	20	70	100	2	1	3	.....	.....	.....
Caradoc	14,367	1,587	7,907	4,863	12,690	221	105	318	489	192	428	777	9	3	6	...	14	3
Chapleau	45,340	45,300	18	22	5	20	10	.....	.....	.....	.....	200	3	.....	.....	.....	3	....
Christian Island	13,264	12,494	560	210	400	20	22	33	29	9	20	90	2	1	1	.....	.....	1
Ft. Frances	81,707	80,959	554	194	1,410	16	142	41	25	6	17	745	....	1	2	.....	3	2
Ft. William	21,514	21,082	360	72	57	86	85	14	8	1	8	250	8	2	4	1	2	..
Georgina Island	3,574	2,792	592	190	400	14	22	51	45	10	28	150	1	1	1	.....	.....	2
Golden Lake	1,500	1,200	260	40	270	4	16	14	12	.....	13	200	1	...	1	.....	.....	1
Gore Bay	14,570	11,859	1,679	1,032	1,884	14	110	202	121	20	165	610	4	1	4	.....	1	3
Kenora	122,753	122,483	174	96	265	.....	195	138	27	.....	14	4,648	.....	.....	2	.....	.....	.....
Manitowaning	179,685	146,921	27,883	4,881	9,009	56	480	1,267	468	287	856	3,975	12	3	7	.....	7	6
Moravian	31,030	28,830	1,200	1,000	2,500	36	36	100	89	29	86	110	2	1	1	.....	.....	.....
New Credit	6,000	100	1,900	4,000	6,000	66	7	102	95	37	130	450	2	1	1	...	5	....
Parry Sound	76,245	74,195	1,210	840	1,300	37	88	49	78	20	52	165	8	1	5	1	1	1
Rama	2,300	1,150	750	400	1,150	51	9	40	0	5	15	200	1	1	1	....	5	....
Rice Lake	8,860	6,950	810	1,100	2,100	47	17	69	79	55	75	165	2	2	2	.....	2	....
Sarnia	51,420	41,641	5,773	4,006	9,147	149	107	431	419	169	450	1,600	7	4	5	1	10	.
Saugeen	10,050	5,030	3,620	1,400	1,800	45	40	125	150	32	130	300	5	1	3	....	4	....
Sault Ste. Marie	39,600	36,325	1,473	1,802	1,875	61	94	133	77	14	165	1,250	5	1	3	....	4	1
Savanne	101,267	100,709	512	46	108	.....	139	40	11	.....	2	3,468	.....	.....	1	.....	.....	.....
Scugog	800	60	225	515	800	8	2	9	10	3	12	75	1	.....	.....	.....	1	....

Table No. 3.—LAND: PRIVATE AND PUBLIC BUILDINGS AND PROPERTY.—*Continued.*

Agencies.	Total Area of Reserve. Acres.	Acres Under wood.	Acres Cleared but not Cultivated.	Acres Under actual Cultivation.	Acres Fenced.	Private Property.							Public Property.					
						Stone, Brick and Frame Dwellings.	Other Dwellings.	Outbuildings, etc.	Ploughs, Harrows, Drills, etc.	Mowers, Reapers, Binders, Threshers, etc.	Carts, Wagons and Vehicles.	Tools and smaller Implements.	Churches.	Council Houses.	School Houses.	Saw Mills.	Other Buildings.	Engines and Machinery.
ONTARIO.—*Con.*																		
Six Nations	43,696	8,840	7,440	27,416	43,696	554	214	1,640	2,216	496	1,624	10,500	15	1	11	....	22	21
Sturgeon Falls	64,780	64,330	.....	450	308	43	75	89	34	6	85	55	4	....	3	....	.....	.....
Thessalon	61,687	59,977	600	1,110	1,110	37	89	147	15	1	32	1,018	4	....	5	....	.....	.....
Tyendinaga	17,604	7,134	2,630	7,840	13,720	237	.....	556	449	229	454	822	2	1	4	....	4	2
Walpole Island*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	1,032,764	894,848	70,755	67,161	116,020	1,895	2,160	5,826	5,063	1,669	5,077	31,408	101	28	77	3	89	51
*Amalgamated with Sarnia Agency.																		
PRINCE EDWARD ISLAND	1,527	726	404	397	397	49	22	23	26	2	5	400	1	1	2	....	3	2
QUEBEC.																		
Becancour	122	6	4	112	90	5	1	7	6	2	5	50	....	.....	.....	.....	.....	.....
Bersimis	63,197	62,784	345	68	50	.....	73	8	7	.....	7	275	1	.....	.....	.....	1	.....
Cacouna	400	400	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caughnawaga	12,327	1,272	6,700	4,355	4,000	525	.....	975	490	300	1,225	660	1	1	5	1	5	20
Jeune Loretto	27	.....	27	.....	20	87	.....	22	.....	.....	35	17	0 1	...	1	....	1	3
Maniwaki	44,537	42,966	1,446	125	653	4	58	93	50	29	69	425	...	1	2	....	2	.....
Maria	416	80	200	136	30	1	39	10	3	10	6	100	1	....	1	.....	.....	1
Mingan	.....	.....	.....	.....	.....	20	5	.....	.....	.....	.....	100	1	.....	.....	.....	.....	.....
Oka	.....	.....	.....	.....	.....	94	.....	107	75	31	132	1,000	1	...	1	....	1	1
Pierreville	579	.....	18	561	238	67	.....	58	15	7	25	140	3	1	2	.....	.....	.....
Pointe Bleue	3,779	2,395	435	949	1,108	49	17	132	60	44	149	280	1	....	1	....	1	3
Ristigouche	8,856	8,200	50	606	606	94	8	189	30	4	80	180	1	1	1	1	4	2
Seven Islands	0	.....	6	.....	.....	40	.....	.....	.....	.....	.....	150	1	.....	.....	.....	.....	.....
St. Regis	6,938	80	5,380	1,478	580	186	29	233	450	189	285	1,488	2	1	6	....	11	9
Timiskaming	14,936	14,376	250	310	210	13	29	37	19	5	35	210	....	....	1	....	...	2
Total	156,120	132,559	14,861	8,700	7,585	1,185	259	1,871	1,205	621	2,054	5,228	14	5	21	2	26	41
SASKATCHEWAN.																		
Assiniboine	40,897	27,264	10,718	2,915	12,136	8	36	102	60	67	140	300	....	1	1	....	4	16
Battleford	172,736	20,618	148,274	3,844	14,467	3	242	270	234	248	433	1,462	0	....	5	1	23	7
Carlton	219,641	86,425	129,677	3,539	25,011	.....	248	404	227	190	396	1,510	4	....	6	1	20	5
Crooked Lake	120,895	17,200	99,577	4,118	20,600	.....	176	218	223	148	223	200	.....	.....	.....	.....	.....	.....
Duck Lake	113,258	27,359	83,681	2,218	21,175	.....	189	260	220	171	340	510	3	1	4	....	...	8
File Hills Agency	65,614	25,000	39,834	780	23,862	7	36	50	23	43	113	380	1	....	1	....	.....	.....
File Hills Colony	18,840	2,000	13,100	3,740	425	13	17	106	101	56	92	300	2	.....	.....	1	2	3
Moose Mountain	30,088	25,486	3,076	1,526	5,000	1	58	45	70	63	170	450	....	1	1	....	1	2
Moose Woods	4,160	1,368	2,685	107	7,940	....	38	28	23	30	28	100	....	....	1	....	....	.....
Onion Lake	190,432	41,896	147,168	1,368	11,100	5	167	121	58	72	351	1,125	....	.....	.....	2	....	1

Pelly	50,336	17,922	29,754	2,660	7,165	6	95	178	148	116	252	830	4	....	3	...	2	2
Qu'Appelle	81,087	6,180	67,367	7,540	17,435	28	133	256	263	175	480	867	...	....	....	....	....	3
Touchwood	125,272	45,065	74,336	5,871	57,149	8	173	359	259	183	423	1,500	1	....	3	....	2	7
Wood Mountain	11,520	10	11,487	23	1,280	.....	11	5	6	4	30	81	....	....	....	....	....	....
Total	1,244,776	343,793	860,734	40,249	225,645	79	1,619	2,402	1,915	1,566	3,471	9,615	21	3	25	5	54	54

RECAPITULATION.

Provinces.	Total Area of Reserve. Acres.	Acres Under wood.	Acres Cleared but not Cultivated.	Acres Under actual Cultivation.	Acres Fenced.	Private Property.							Public Property.					
						Stone, Brick and Frame Dwellings.	Other Dwellings.	Outbuildings, etc.	Ploughs, Harrows, Drills, etc.	Mowers, Reapers, Binders, Threshers, etc.	Carts, Wagons and Vehicles.	Tools and smaller Implements.	Churches.	Council Houses.	School Houses.	Saw Mills.	Other Buildings.	Engines and Machinery.
Alberta	1,309,906	385,800	874,374	49,732	264,795	228	1,200	1,950	1,230	1,230	2,666	7,361	5	7	7	1	52	536
British Columbia	726,316	433,157	258,227	34,932	167,997	4,073	2,951	4,038	3,118	1,171	2,806	24,044	158	34	42	8	57	15
Manitoba	383,286	263,866	106,855	12,565	22,422	125	1,847	1,566	695	564	1,544	4,898	37	2	31	1	48	8
New Brunswick	39,713	38,034	855	824	1,197	321	38	183	85	26	149	940	7	6	11	....	7	...
Nova Scotia	19,696	15,078	2,492	2,126	2,046	342	61	155	103	20	166	2,473	8	2	12	....	9	1
Ontario	1,032,764	894,848	70,755	67,161	116,020	1,895	2,160	5,826	5,063	1,669	5,077	31,408	101	28	77	3	89	51
Prince Edward Island	1,527	726	404	397	397	49	22	23	26	2	5	400	1	1	2	..	3	2
Quebec	156,120	132,559	14,861	8,700	7,585	1,185	259	1,871	1,205	621	2,054	5,228	14	5	21	2	26	41
Saskatchewan	1,244,776	343,793	860,734	40,249	225,645	79	1,619	2,402	1,915	1,566	3,471	9,615	21	3	25	5	54	54
Total	4,914,104	2,507,861	2,189,557	216,686	808,704	8,297	10,157	18,614	13,340	6,896	17,938	86,367	352	88	228	20	345	708

TABLE No. 4.—LIVE STOCK AND POULTRY: GENERAL EFFECTS.

Agencies.	Horses.			Cattle.					Poultry.	General Effects.					
	Stallions.	Geldings and Mares.	Foals.	Bulls.	Steers and Work Oxen.	Milch Cows.	Young Stock.	Other Stock.		Motor and Sail Boats.	Row Boats and Canoes.	Rifles and Shot Guns.	Steel Traps.	Nets.	Tents.
ALBERTA.															
Blackfoot	.....	1,785	30	33	.....	555	993	.....	50	.....	5	85	100	.....	160
Blood	17	3,600	56	82	60	1,400	2,200	.....	150	.....	.....	40	.....	.....	350
Edmonton	1	317	.....	10	40	202	247	32	701	.....	21	182	1,652	62	103
Hobbema	.....	766	62	.....	89	152	200	105	429	.....	9	285	1,983	25	155
Lesser Slave Lake	.....	873	.....	7	24	70	13	.....	.....	.....	199	473	2,382	306	386
Peigan	8	1,147	229	31	.....	.....	.....	2,275	27	.....	.....	36	84	.....	78
Saddle Lake	2	538	.....	1	72	243	284	78	540	.....	70	186	2,049	198	137
Sarcee	.....	449	50	.....	26	103	248	.....	50	.....	.....	15	50	.....	65
Stony	9	900	.....	.....	.....	87	158	.....	.....	.....	.....	162	1,000	.....	200
Total	37	10,275	427	164	310	2,812	4,343	2,490	1,947	.....	304	1,464	9,300	591	1,634
BRITISH COLUMBIA.															
Babine and Upper Skeena	9	567	50	5	4	192	100	14	25	13	229	929	8,900	183	140
Bella Coola	6	328	56	2	6	17	16	.....	525	176	224	635	4,500	70	107
Cowichan	5	250	60	1	5	230	79	1,605	7,750	197	353	603	26	82	208
Kamploops	73	3,402	679	51	318	2,026	555	335	4,532	.....	71	253	23	.....	493
Kootenay	31	1,133	187	19	97	770	677	20	585	.....	61	199	143	.....	149
Kwawkewlth	.....	1	.....	.....	.....	2	1	.....	420	126	338	298	2,660	221	109
Lytton	43	718	215	36	98	188	434	692	2,282	6	128	325	471	67	197
Nass	.....	12	.....	.....	.....	7	4	.....	950	172	311	.....	3,650	272	278
New Westminster	19	399	72	29	121	416	472	1,758	7,024	158	506	721	916	143	172
Okanagan	30	1,410	440	34	560	1,100	1,275	515	1,800	2	25	275	275	2	175
Queen Charlotte	.....	8	2	.....	2	38	25	.....	120	40	105	90	100	22	40
Stikine	.....	19	.....	.....	.....	.....	.....	.....	.....	2	75	409	2,776	145	169
Stuart Lake	13	438	69	12	61	175	178	.....	335	6	243	634	5,140	353	180
West Coast	.....	5	.....	10	.....	37	23	.....	1,096	215	1,180	730	2,173	176	172
Williams Lake	30	2,050	480	20	165	750	415	.....	915	.....	37	325	4,400	.....	365
Total	259	10,740	2,310	219	1,437	6,948	4,253	4,939	28,359	1,113	3,886	6,426	36,153	1,736	2,954
MANITOBA.															
Birtle	5	405	9	6	60	87	113	.....	1,223	.....	1	126	1,365	8	118
Clandeboye	.....	31	1	11	107	165	157	30	255	1	202	186	1,300	300	226
Fisher River	7	111	.....	9	151	202	193	124	1,026	.....	90	182	1,550	700	186
Griswold	.....	260	.....	.....	.....	6	.....	22	230	.....	4	128	1,896	3	86
Manitowapah	3	435	19	14	24	319	341	46	369	66	311	453	7,260	1,571	282
Norway House	.....	.....	.....	2	9	20	13	.....	.....	.....	835	965	7,000	1,675	665
Pas	9	90	5	9	28	140	42	.....	.....	2	462	548	9,350	1,045	256
Portage la Prairie	2	261	13	.....	8	1	2	21	310	.....	18	105	1,270	.....	89
Total	26	1,632	47	51	387	940	861	243	3,413	69	1,953	2,693	30,925	5,302	1,908

NEW BRUNSWICK.															
Northern Division		14				13	9	2	76		11	13	41		5
Northeastern		28	4	3	6	26	27	12	250	30	82	160	285	220	35
Southwestern		5				1		1	55		25	69	811		19
Total		47	4	3	6	40	36	15	381	30	118	242	1,137	220	59
NOVA SCOTIA.															
Annapolis											3	16	15		2
Antigonish and Guysboro		1			9	10	10		150	1	5	30	30	15	5
Cape Breton (Eskasoni)		15	2	3	5	25	19		107	3	9	13	180	10	
Cape Breton (Sydney)															
Colchester		3				2			50			20	35		
Cumberland		1				1					2	5			
Digby						1			30		6	11	250		
Halifax		3				9	10		150		4	17	35		2
Hants		5	1		2	8	20	10	150	2	3	20	200	1	1
Hants (Windsor)											3				
Inverness		15	3			24	16		62	2	25	33	350	7	2
Kings		4			2	3	2		100		8	10	150	1	2
Lunenburg		4			18	14	13	83	220		10	24	20	8	3
Pictou		3							40	4	7	33	40	10	
Queens		1			2	2	4	4	20		5	15	10	5	10
Richmond		12			4	15	15		75	2	12	20	75	15	
Shelburne					2						3	15	100		
Victoria		6		1	3	18	12		50		9	23	102	3	
Yarmouth											9	18	2	20	10
Total		73	6	4	47	132	121	97	1,204	14	116	323	1,594	95	37
ONTARIO.															
Alnwiek		25				15	5	20	293	1	19	39	1,770		11
Cape Croker		100	3			40	30	30	225	10	20	20		130	
Caradoc		258	19	4	37	149	122	153	3,105		2	80	584		8
Chapleau								15	200	2	165	310	5,400	164	153
Christian Island	1	35	4	1	4	16	12	50	250	12	22	35	200	10	20
Fort Frances	12	70	12		4	9	6			3	217	201	3,450	449	82
Fort William		18		2		28	50	70	380	25	350	480	820	400	250
Georgina Island		24		1		17	18	9	230	5	18	20	190	11	10
Golden Lake		10	1		2	11			200	1	20	40	200	6	20
Gore Bay	7	107		2		58	43	230	446	18	15	66	175	80	2
Kenora		48		5	15	19	13	3	95		317	299	7,825	412	208
Manitowaning	7	578	112	24	200	423	292	1,220	2,923	98	100	285	1,577	222	66
Moravian	1	84	11			41	22	28	950		2	35	75		
New Credit	2	111	21	4	21	116	54	105	893		2	25	150		
Parry Sound	3	64	3	6	6	52	58	33	425	10	62	240	730	23	50
Rama		13	1	1		12	9	11	450		30	60	1,200		25
Rice Lake		47	6	1		57	90	153	875	3	80	99	4,500		24
Sarnia	1	350	75	5	36	200	160	260	3,100	12	125	200	8,400	30	15
Saugeen	1	100	12		10	60	65	50	400		6	75	400	10	15
Sault Ste. Marie		120	11	5	12	68	43	15	500	28	116	138	953	270	56
Savanne		3		2	5	7	6				302	337	6,540	410	222
Seugog		8	2			5	2	5	110		11	10	675		5
Six Nations	9	900	325	40	1,050	960	1,040	1,400	34,960		23	201	380		4
Sturgeon Falls	9	63	7	10	14	41	58		740	13	177	270	1,500	125	155
Thessalon	6	37	3			14	14	22	470	29	73	109	340	235	56
Tyendinaga		311	34	30	20	630	250	450	5,000	5	27	55	1,000	15	3
Walpole Island*															
Total	59	3,484	662	143	1,436	3,048	2,462	4,322	57,220	275	2,301	3,729	49,031	3,002	1,459

*Amalgamated with Sarnia Agency.

TABLE No. 4.—LIVE STOCK AND POULTRY: GENERAL EFFECTS.—*Continued.*

Agencies.	Horses.			Cattle.					Poultry.	General Effects.					
	Stallions.	Geldings and Mares.	Foals.	Bulls.	Steers and Work Oxen.	Milch Cows.	Young Stock.	Other Stock.		Motor and Sail Boats.	Row Boats and Canoes.	Rifles and Shot Guns.	Steel Traps.	Nets.	Tents.
PRINCE EDWARD ISLAND	.....	13	1	3	.....	11	8	.....	150	4	17	24	50	20	.....
QUEBEC.															
Becancour	.....	3	1	1	.....	12	3	4	20	.....	1	2	6	.....	.....
Bersimis	.....	4	.....	1	.....	11	6	.....	52	2	112	151	1,400	13	135
Caconna	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	12	19	137	.....	.....
Caughnawaga	10	450	100	200	150	900	400	1,000	9,000	5	50	100	150	6	6
Jeune Lorette	1	6	.....	.....	1	11	.....	.....	225	.....	10	42	400	.....	8
Maniwaki	.....	47	.....	2	.....	47	37	48	259	.....	71	125	1,687	54	62
Maria	.....	2	1	1	12	11	14	30	90	.....	10	21	120	.....	2
Mingan	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	50	75	2,500	.....	50
Oka	2	85	10	5	.....	70	50	35	200	.....	35	40	50	.....	3
Pierreville	.....	8	7	4	.....	12	8	4	50	.....	25	25	60	.....	3
Pointe Bleue	2	49	9	6	19	103	35	114	600	.....	170	460	7,000	165	200
Ristigouche	.....	23	1	4	10	35	43	42	125	.....	16	28	160	.....	2
Seven Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	300	500	10,000	200	250
St. Regis	2	174	9	14	17	237	166	240	1,215	12	75	55	625	37	7
Timiskaming	.....	29	2	1	.....	17	11	23	78	.....	18	44	400	15	18
Total	17	880	140	239	209	1,466	773	1,540	11,914	32	955	1,687	24,695	490	746
SASKATCHEWAN.															
Assiniboine	1	256	36	4	1	143	180	.....	300	.....	.....	45	885	.....	38
Battleford	10	819	.....	19	69	426	448	201	525	.....	10	223	2,640	138	184
Carlton	.....	438	25	22	72	412	479	319	1,052	.....	84	274	3,445	152	176
Crooked Lake	.....	389	39	0	41	257	299	.....	750	.....	.....	123	104	12	170
Duck Lake	2	410	.....	1	214	430	671	47	709	.....	13	169	2,600	20	110
File Hills Agency	1	100	17	2	39	146	140	19	55	.....	.....	58	120	.....	44
File Hills Colony	3	135	15	.....	33	150	64	21	.....	.....	.....	33	60	.....	.....
Moose Mountain	1	169	9	3	42	128	71	.....	200	.....	.....	100	175	50	56
Moose Woods	1	77	7	2	32	84	133	.....	176	.....	4	20	150	1	12
Onion Lake	.....	420	47	1	119	251	232	.....	970	.....	47	260	3,900	132	165
Pelly	.....	245	.....	7	50	201	306	.....	250	.....	.....	144	1,990	.....	96
Qu'Appelle	.....	475	.....	12	28	257	249	17	99	.....	.....	122	776	22	156
Touchwood	8	657	68	16	100	362	380	9	478	.....	.....	255	4,875	5	181
Wood Mountain	2	103	22	.....	3	1	.....	.....	.....	.....	.....	13	42	.....	13
Total	29	4,693	285	95	843	3,338	3,653	633	5,564	.....	158	1,839	21,762	532	1,401

RECAPITULATION.

Provinces.	Horses.			Cattle.					Poultry.	General Effects.					
	Stallions.	Geldings and Mares.	Foals.	Bulls.	Steers and Work Oxen.	Milch Cows.	Young Stock.	Other Stock.		Motor and Sail Boats.	Row Boats and Canoes.	Rifles and Shot Guns.	Steel Traps.	Nets.	Tents.
Alberta	37	10,275	427	164	310	2,812	4,343	2,490	1,047	.....	304	1,464	9,300	591	1,634
British Columbia	259	10,740	2,310	219	1,437	5,948	4,253	4,939	28,359	1,113	3,886	6,426	36,153	1,736	2,954
Manitoba	26	1,632	47	51	387	940	861	243	3,413	69	1,953	2,693	30,925	5,302	1,908
New Brunswick	.....	47	4	3	6	40	36	15	381	30	118	242	1,137	220	59
Nova Scotia	.....	73	6	4	47	132	121	97	1,204	14	116	323	1,549	95	37
Ontario	59	3,484	662	143	1,436	3,048	2,462	4,322	57,220	275	2,301	3,729	49,031	3,002	1,459
Prince Edward Island	.....	13	1	3	.....	11	8	.....	150	4	17	24	50	20	.....
Quebec	17	880	140	239	209	1,466	773	1,540	11,914	32	955	1,687	24,695	490	746
Saskatchewan	29	4,693	285	95	843	3,338	3,653	633	5,564	.....	158	1,839	21,762	532	1,401
Total	427	31,819	3,882	921	4,675	17,735	16,510	14,279	110,152	1,537	9,808	18,427	174,602	11,988	10,198

TABLE No. 5.—VALUE OF REAL AND PERSONAL PROPERTY AND PROGRESS DURING YEAR.

Agencies.	Total Value of Lands in Reserves.	Value of Private Fencing.	Value of Private Buildings.	Value of Public Buildings Property of the Band.	Value of Implements and Vehicles.	Value of Live Stock and Poultry.	Value of General Effects	Value of House-hold Effects.	Total Value of Real and Personal Property.	Progress During Year 1918-1919.		
										Value of New Land Improvements.	Value of Buildings Erected.	Total Increase in Value.
	$	$	$	$	$	$	$	$	$	$	$	$
ALBERTA.												
Blackfoot	2,812,530	15,120	100,028	12,240	61,794	226,535	5,300	24,000	3,257,547	111,192	5,570	116,762
Blood	7,016,720	16,100	59,800	38,700	85,500	340,000	15,000	12,000	7,583,820	7,000	2,000	9,000
Edmonton	1,178,633	11,010	53,935	11,100	20,275	65,500	5,390	7,215	1,353,058	2,875	665	3,540
Hobbema	947,760	24,160	21,125	.....	54,013	98,399	8,156	12,762	1,166,375	9,742	625	10,367
Lesser Slave Lake	1,293,630	1,204	34,600	.....	13,332	55,334	13,700	12,980	1,424,780	130	2,000	2,130
Peigan	977,210	3,805	28,480	22,200	39,754	202,780	11,786	8,760	1,294,775	10,140	5,000	15,140
Saddle Lake	862,846	3,115	28,125	940	21,570	70,375	4,040	7,230	998,241	10	.....	10
Sarcee	1,180,120	9,800	20,000	36,500	14,000	53,640	850	1,800	1,316,710	2,845	2,000	4,845
Stony	264,774	8,000	15,300	500	13,000	40,300	3,000	10,000	354,874	.....	.....	.....
Total	16,534,223	92,314	361,393	122,180	323,238	1,152,863	67,222	96,747	18,750,180	143,934	17,860	161,794
BRITISH COLUMBIA.												
Babine	65,262	17,950	123,100	15,435	14,150	33,100	44,200	31,500	344,697	8,100	7,100	15,200
Bella Coola	365,600	3,200	130,000	8,000	11,000	14,525	105,000	50,000	687,325	500	5,000	5,500
Cowichan	1,762,700	110,050	171,200	2,500	40,610	45,400	30,725	46,900	2,210,085	975	1,800	2,775
Kamloops	3,748,514	53,815	122,280	37,275	82,653	346,144	19,225	15,250	4,425,156	3,500	6,500	10,000
Kootenay	142,085	14,461	19,210	117,700	20,598	107,385	5,240	6,430	433,118	.....	150	150
Kwawkewlth	278,321	1,360	62,515	2,475	8,900	640	47,800	64,200	466,211	600	4,900	5,500
Lytton	967,478	12,875	61,425	22,920	30,694	72,945	6,075	19,875	1,194,287	5,800	4,200	10,000
Nass	991,822	17,700	255,145	96,390	1,500	4,450	75,000	33,100	1,475,107	.....	.....	.....
New Westminster	1,606,145	12,851	131,000	53,700	13,000	56,415	47,290	63,200	1,983,601	.....	.....	.....
Okanagan	2,425,000	44,500	83,550	14,000	34,350	229,000	6,150	12,650	2,849,200	.....	.....	.....
Queen Charlotte	95,000	1,200	32,000	1,500	26,000	2,200	16,000	14,000	187,900	.....	5,000	5,000
Stikine	2,100	60	25,175	.....	6,223	3,265	18,284	34,250	89,357	.....	.....	.....
Stuart Lake	245,790	10,060	77,805	24,600	8,410	37,580	22,770	12,920	439,935	1,010	2,650	3,660
West Coast	114,000	3,635	107,600	.....	1,410	4,430	60,400	31,650	323,025	15	900	915
Williams Lake	544,425	19,875	49,050	8,900	34,985	112,930	8,950	6,950	786,065	.....	.....	.....
Total	13,354,242	323,592	1,450,955	405,395	334,483	1,070,409	513,118	442,875	17,895,069	20,500	38,200	58,700
MANITOBA.												
Birtle	406,600	1,545	18,350	1,345	18,525	40,526	3,570	3,380	493,841	3,114	1,740	4,854
Clandeboye	211,529	1,035	30,325	525	3,425	36,700	6,086	9,702	299,327	240	1,500	1,740
Fisher River	807,970	12,575	54,400	11,100	14,754	27,330	11,025	22,300	961,454	6,491	2,200	8,691
Griswold	200,500	1,045	16,320	7,200	25,800	27,800	2,250	3,900	284,815	790	225	1,015
Manitowapah	270,179	2,247	28,775	14,950	13,710	84,590	14,850	12,050	441,351	855	300	1,155
Norway House	81,000	550	42,800	.....	800	1,725	37,500	14,500	178,875	.....	700	700
Pas	266,050	4,180	35,300	4,600	5,885	26,310	37,000	18,350	397,675	.....	.....	.....
Portage la Prairie	354,040	3,305	8,775	9,650	18,776	26,760	1,450	4,405	427,161	10,420	800	11,220
Total	2,597,868	26,482	235,045	49,370	101,675	271,741	113,731	88,587	3,484,499	21,910	7,465	29,375

New Brunswick.												
Northern Division	19,060	150	12,500	14,000	1,200	2,200	475	3,350	52,935	100	400	500
Northeastern	46,340	2,260	26,500	32,600	4,700	5,100	6,500	16,000	140,000	225	300	525
Southwestern	6,900	165	9,125	16,000	400	675	1,242	1,625	36,132	.....	.....	.....
Total	72,300	2,575	48,125	62,600	6,300	7,975	8,217	20,975	229,067	325	700	1,025
Nova Scotia.												
Annapolis	1,000	40	1,200	.....	75	.....	25	135	2,475	.....	.....	.....
Antigonish and Guysboro	10,000	1,025	2,000	2,500	75	200	250	150	16,200	.....	.....	.....
Cape Breton (Eskasoni)	14,000	605	9,000	7,000	2,600	2,000	1,600	1,300	38,105	200	100	300
Cape Breton (Sydney)	8,500	.....	5,000	.....	.....	.....	1,250	1,250	16,000	.....	.....	.....
Colchester	1,800	50	2,500	900	250	300	180	350	6,330	.....	600	600
Cumberland	1,250	.....	1,000	.....	100	200	100	100	2,750	.....	.....	.....
Digby	1,675	65	2,000	1,600	60	85	275	675	6,433	35	.....	35
Halifax	1,650	690	4,270	.....	350	1,675	1,090	1,770	11,495	.....	.....	.....
Hants	10,510	500	5,000	2,500	1,900	2,000	700	2,500	25,610	50	200	250
Hants (Windsor)	.....	.....	250	.....	.....	.....	500	250	1,000	.....	.....	.....
Inverness	9,725	1,100	9,100	4,200	450	2,950	550	860	28,935	50	100	150
Kings	4,000	100	2,800	.....	300	645	305	300	8,450	10	20	30
Lunenburg	4,000	320	8,250	1,000	1,035	2,375	625	1,800	19,405	200	725	925
Pictou	1,000	150	4,650	4,000	250	300	2,000	1,550	13,900	.....	.....	.....
Queens	1,000	700	200	.....	200	250	.....	400	2,750	.....	.....	.....
Richmond	7,000	350	3,500	12,000	800	2,000	1,500	750	27,900	100	300	400
Shelburne	.....	.....	1,000	.....	40	100	600	500	2,240	.....	.....	.....
Victoria	6,500	325	2,000	3,200	350	1,450	400	600	14,825	50	25	75
Yarmouth	150	.....	125	.....	.....	.....	.....	.....	275	.....	.....	.....
Total	83,760	6,020	63,845	38,900	8,835	16,530	11,950	15,240	245,080	695	2,070	2,765
Ontario.												
Alnwick	60,000	4,000	19,500	3,600	2,830	3,250	1,210	7,550	102,840	.....	.....	.....
Cape Croker	115,000	3,000	40,000	30,000	4,000	18,000	4,600	15,680	230,280	.....	.....	.....
Caradoc	141,905	17,445	89,860	.....	22,800	28,975	700	32,100	333,785	300	650	950
Chapleau	18,400	300	10,500	600	.....	100	4,000	.....	33,900	.....	500	500
Christian Islands	20,400	850	7,500	2,000	2,100	4,600	2,800	2,700	51,950	150	200	350
Fort Frances	249,949	1,000	22,200	8,600	8,960	7,000	6,480	8,400	312,589	10,000	2,000	12,000
Fort William	175,000	700	30,000	3,000	1,500	9,000	7,000	8,000	234,200	.....	.....	.....
Georgina Island	32,150	1,050	6,500	1,300	1,530	4,990	1,110	1,700	50,330	.....	.....	.....
Golden Lake	3,000	700	4,000	3,100	1,200	2,100	2,000	3,000	19,100	.....	.....	.....
Gorn Bay	80,000	15,020	28,000	22,700	0,500	22,500	4,970	15,600	198,290	660	925	1,585
Kenora	122,937	530	15,480	210	4,392	5,044	18,778	17,725	185,096	45	510	555
Manitowaning	242,000	17,820	62,750	26,600	4 2,425	86,850	18,100	36,800	533,345	1,120	3,125	4,245
Moravian	95,300	5,850	30,600	5,000	8,500	20,000	1,100	1,100	167,450	.....	100	100
New Credit	210,000	9,000	44,000	10,100	10,000	24,510	600	12,000	320,210	100	1,050	1,150
Parry Sound	122,000	950	20,900	17,300	3,980	13,500	7,621	16,000	202,251	.....	.....	.....
Rama	40,000	3,000	15,300	13,200	1,500	3,400	1,800	7,250	85,150	.....	400	400
Rice Lake	110,000	2,900	45,000	9,000	5,200	21,650	5,000	11,000	209,750	.....	.....	.....
Sarnia	628,267	14,223	77,135	21,250	23,349	46,400	5,007	15,550	831,181	.....	850	850
Saugeen	65,000	1,600	13,000	22,000	3,500	14,000	1,500	5,000	125,600	1,000	1,000	2,000
Sault Ste Marie	50,400	2,600	27,000	25,500	6,500	13,250	8,500	12,650	146,400	.....	800	800
Savanne	101,570	216	7,750	75	2,488	970	19,659	14,982	147,710	25	505	530
Seugog	68,000	1,790	2,000	500	655	1,470	350	1,000	75,765	.....	.....	.....
Six Nations	1,092,400	436,960	668,900	55,000	291,780	300,900	4,000	75,000	2,924,940	4,000	1,200	5,200
Sturgeon Falls	242,100	2,350	33,000	9,500	4,200	14,200	13,900	31,000	350,340	600	2,500	3,100
Thessalon	134,668	14,000	15,275	10,500	1,130	10,050	20,400	8,450	214,463	4,222	1,200	5,422
Tyendinaga	645,300	134,825	95,255	39,300	42,754	84,337	2,645	55,800	1,100,216	.....	2,600	2,600
*Walpole Island	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	4,874,826	693,579	1,431,405	339,035	506,773	761,046	163,530	416,037	9,187,131	22,222	20,115	42,337

*Amalgamated with Sarnia Agency.

TABLE No. 5—VALUE OF REAL AND PERSONAL PROPERTY AND PROGRESS DURING YEAR.—*Continued.*

Agencies.	Total Value of Lands in Reserves.	Value of Private Fencing.	Value of Private Buildings.	Value of Public Buildings Property of the Band.	Value of Implements and Vehicles.	Value of Live Stock and Poultry.	Value of General Effects.	Value of House-hold Effects.	Total Value of Real and Personal Property.	Progress During Year 1918-19.		
										Value of New Land Improvements.	Value of Buildings Erected.	Total Increase in Value.
	$	$	$	$	$	$	$	$	$	$	$	$
PRINCE EDWARD ISLAND	20,150	1,720	7,520	10,000	1,000	1,750	2,000	3,500	47,640	50	250	300
QUEBEC.												
Becancour	4,000	150	3,200	.....	290	1,125	10	65	8,840	50	.....	50
Bersimis	36,000	445	17,500	2,000	195	1,300	5,000	6,500	68,940	.....	.....	.....
Cacouna	1,000	.....	3,650	.....	150	200	.....	1,155	6,155	.....	.....	.....
Caughnawaga	750,000	9,000	410,000	60,000	40,000	125,000	2,000	65,000	1,461,000	700	15,000	15,700
Jeune Lorette	22,000	350	36,000	25,000	1,700	1,200	1,000	10,000	97,250	.....	400	400
Maniwaki	31,190	4,015	13,415	2,093	6,566	11,151	5,310	8,200	81,940	385	395	780
Maria	22,600	540	2,000	3,500	800	900	300	2,000	32,640	25	.....	25
Mingan	.....	.....	4,200	300	.....	.....	7,525	5,000	17,025	.....	.....	.....
Oka	.....	3,800	40,000	3,000	9,700	16,000	.....	4,800	77,300	.....	.....	.....
Pierreville	30,000	1,100	55,000	2,000	600	3,500	800	17,000	110,000	250	.....	250
Pointe Bleue	34,200	5,000	26,200	6,000	5,500	9,500	25,000	10,000	121,400	2,200	1,200	3,400
Ristigouche	173,000	12,400	50,800	.....	15,000	9,000	18,000	15,200	293,400	.....	800	800
Seven Islands	500	.....	3,000	1,200	.....	.....	58,700	12,000	75,400	.....	.....	.....
St. Regis	228,425	1,350	77,000	15,000	10,100	29,000	1,700	17,000	379,575	.....	200	200
Timiskaming	23,000	600	7,000	1,000	1,400	6,200	800	1,500	41,500	200	.....	200
Total	1,355,915	38,750	748,965	121,093	92,001	214,076	126,145	175,420	2,872,365	3,810	17,995	21,805
SASKATCHEWAN.												
Assiniboine	422,159	3,506	19,233	3,805	14,408	48,140	2,429	6,060	510,740	7,600	1,200	8,800
Battleford	1,504,783	9,775	25,800	200	42,325	122,347	9,850	14,800	1,729,880	3,215	.....	3,215
Carlton	1,759,385	12,955	65,455	32,000	29,110	137,114	9,541	17,814	2,063,374	1,723	.....	1,723
Crooked Lake	1,138,095	45,000	50,620	3,740	43,060	97,445	2,911	11,000	1,391,871	3,774	5,425	9,199
Duck Lake	1,832,310	21,161	38,900	10,300	37,204	142,331	4,442	12,519	2,105,167	1,200	300	1,500
File Hills Agency	408,984	6,875	11,050	300	11,350	25,700	1,170	5,420	470,849	990	.....	990
File Hills Colony	277,845	425	53,000	.....	18,500	24,230	450	6,750	381,200	750	3,000	3,750
Moose Mountain	240,704	1,200	9,500	2,500	9,300	34,340	2,100	4,800	304,444	1,040	400	1,440
Moose Woods	62,500	972	4,200	700	5,035	28,251	500	4,700	106,858	200	200	400
Onion Lake	1,825,400	19,100	43,600	4,000	19,800	98,220	8,400	10,900	2,029,420	2,505	300	2,805
Pelly	452,733	3,400	27,900	3,700	24,550	61,000	4,050	11,800	589,133	1,800	1,300	3,100
Qu'Appelle	1,011,464	6,974	30,895	4,530	38,440	126,409	3,507	12,960	1,235,179	36,712	575	37,287
Touchwood	1,259,101	16,444	37,680	2,400	41,788	167,025	13,661	18,450	1,556,549	16,185	3,981	20,166
Wood Mountain	57,600	500	1,200	.....	1,700	4,120	500	2,100	67,720	250	.....	250
Total	12,253,063	148,287	419,033	74,175	336,570	1,116,072	03,511	140,073	14,551,384	77,944	16,681	94,025

RECAPITULATION.

Provinces.	Total Value of Lands in Reserves.	Value of Private Fencing.	Value of Private Buildings.	Value of Public Buildings Property of the Band.	Value of Implements and Vehicles.	Value of Live Stock and Poultry.	Value of General Effects.	Value of House-hold Effects.	Total Value of Real and Personal Property.	Progress During Year 1918-19.		
										Value of New Land Improvements.	Value of Buildings Erected.	Total Increase in Value.
	$	$	$	$	$	$	$	$	$	$	$	$
Alberta	16,534,223	92,314	361,393	122,180	323,238	1,152,863	67,222	96,747	18,750,180	143,934	17,860	161,794
British Columbia	13,354,242	323,592	1,450,955	405,395	334,483	1,070,409	513,118	442,875	17,895,069	20,500	38,200	58,700
Manitoba	2,597,868	26,482	235,045	49,370	101,675	271,741	113,731	88,587	3,484,499	21,910	7,465	29,375
New Brunswick	72,300	2,575	48,125	62,600	6,300	7,975	8,217	20,975	229,067	325	700	1,025
Nova Scotia	83,760	6,020	63,845	38,900	8,835	16,530	11,950	15,240	245,080	695	2,070	2,765
Ontario	4,874,826	693,579	1,431,405	339,935	506,773	761,046	163,530	416,037	9,187,131	22,222	20,115	42,337
Prince Edward Island	20,150	1,720	7,520	10,000	1,000	1,750	2,000	3,500	47,040	50	250	300
Quebec	1,355,915	38,750	748,965	121,093	92,001	214,076	126,145	175,420	2,872,365	3,810	17,995	21,805
Saskatchewan	12,253,063	148,287	419,033	74,175	336,570	1,116,672	63,511	140,073	14,551,384	77,944	16,081	94,625
Total	51,146,347	1,333,319	4,766,286	1,223,648	1,710,875	4,613,062	1,069,424	1,399,454	67,262,415	291,390	121,336	412,726

TABLE No. 6.—SOURCES AND VALUE OF INCOME.

Agencies.	Value of Farm Products, including Hay.	Value of Beef sold, also of that used for food.	Wages Earned.	Received from Land Rentals and from Timber.	Earned by Fishing.	Earned by Hunting and Trapping.	Earned by other Industries and Occupations	Annuities paid, and Interest on Indian Trust Funds.	Total Income of Indians.
ALBERTA.	$	$	$	$	$	$	$	$ cts.	$ cts.
Blackfoot	55,816	10,548	17,000	4,158	110	2,000	30,000	25,922 05	145,554 05
Blood	110,000	59,029	50,000	25,218	.....	500	2,500	6,185 35	254,332 35
Edmonton	75,770	16,511	19,599	.....	1,800	10,292	11,685	22,291 53	160,948 53
Hobbema	61,750	4,186	11,912	.....	2,000	2,897	26,998	6,638 09	116,381 09
Lesser Slave Lake	25,299	.....	.....	.....	.....	.....	.....	13,520 00	38,819 00
Peigan	8,081	14,264	13,521	3,587	.....	.....	.....	5,759 37	45,212 37
Saddle Lake	30,620	3,525	6,250	.....	1,175	5,300	5,100	4,495 23	56,465 23
Sarcee	20,439	4,723	2,000	7,262	.....	300	4,000	1,086 26	39,810 26
Stony	9,898	1,610	18,398	2,700	.....	11,452	10,225	4,105 49	58,388 49
Total	397,673	118,296	138,680	42,925	5,085	32,741	90,508	90,004 27	915,912 27
BRITISH COLUMBIA.									
Babine and Upper Skeena	65,400	1,400	50,000	.....	10,500	20,200	34,400	224 95	182,124 95
Bella Coola	6,050	500	8,100	.....	158,000	41,000	52,500	16 59	266,166 59
Cowichan	36,450	2,580	63,700	.....	49,100	975	5,850	3,394 22	162,049 22
Kamloops	288,102	.....	.....	250	.....	.....	.....	1,018 27	289,370 27
Kootenay	44,530	12,050	28,200	.....	1,060	1,850	2,375	39 81	90,110 81
Kwawkewlth	800	300	20,150	494	144,500	1,450	27,050	68 35	194,812 35
Lytton	34,151	12,820	50,470	.....	.....	3,061	4,070	863 95	105,435 95
Nass	32,000	350	02,640	.....	84,420	23,490	25,520	3,360 10	231,780 10
New Westminster	20,800	3,300	68,800	2,500	59,900	27,800	57,250	6,928 72	247,278 72
Okanagan	50,000	25,000	4,500	4,950	600	825	2,350	410 71	88,635 71
Queen Charlotte	3,200	5,500	12,000	.....	24,000	.....	10,000	31 56	54,731 56
Stikine	545	.....	20,162	.....	8,400	93,810	11,410	.....	134,327 00
Stuart Lake	27,093	4,985	10,230	.....	14,150	33,600	4,575	2,218 00	96,851 00
West Coast	178	75	.....	115	96,500	975	6,315	21 70	104,179 70
Williams Lake	26,000	3,500	0,500	.....	.....	29,000	2,700	33 36	73,733 36
Total	638,305	72,360	408,452	8,309	651,130	278,036	246,365	18,630 29	2,321,587 29
MANITOBA.									
Birtle	55,835	3,285	7,350	.....	810	3,780	4,075	4,043 21	79,188 21
Clandeboye	17,291	3,375	14,330	446	1,725	5,000	.....	7,119 25	49,286 25
Fisher River	18,350	3,600	20,500	.....	14,500	0,500	12,800	13,648 23	92,898 23
Griswold	34,554	660	3,500	.....	300	2,900	1,350	3 60	43,267 60
Manitowapah	41,495	5,750	18,500	1,940	20,300	5,600	4,750	0,295 44	107,630 44
Norway House	3,350	.....	22,000	.....	28,600	68,000	19,500	13,105 00	154,555 00
Pas	13,220	4,100	16,500	.....	11,500	40,500	2,000	13,804 02	101,624 02
Portage la Prairie	84,702	300	6,500	270	.....	1,550	2,350	7,218 33	102,890 33
Total	268,707	21,070	109,180	2,656	77,735	136,840	46,825	68,237 08	731,340 08
NEW BRUNSWICK.									
Northern Division	2,700	.....	14,800	100	70	85	.....	1,696 84	19,451 84
Northeastern	4,598	200	8,000	2,500	6,500	500	2,400	482 84	25,180 84
Southwestern	955	.....	13,300	.....	500	750	2,025	35 71	17,565 71
Total	8,253	200	36,100	2,600	7,070	1,335	4,425	2,215 39	62,198 39

Nova Scotia.									
Annapolis	100		550			50	100		800 00
Antigonish and Guysboro	600	100	4,500		300	600	3,500	33 47	9,633 47
Cape Breton (Eskasoni)	3,800	400	1,400		200	280	1,500		7,580 00
Cape Breton (Sydney)			15,000					14 59	15,014 59
Colchester	350		4,500			350	1,500		6,700 00
Cumberland	100		1,000		50	250	700	78 85	2,178 85
Digby	250		160		60	350	800		1,620 00
Halifax	2,130	1,615	12,900		100		11,000		27,745 00
Hants	1,300	700	900		100	1,000	2,025	17 08	6,042 08
Hants (Windsor)			300				200		500 00
Inverness	2,410	166	7,000		3,100	1,000	900		14,576 00
Kings	600	80	5,000		500	500	4,000		10,680 00
Lunenburg	3,225	875	4,300	70	475	400	1,850	15	11,195 15
Pictou	545		10,000		500		500		11,545 00
Queens	800	150	700		150	200	300	137 32	2,437 32
Richmond	2,500	450	4,000		1,450	38	1,200		9,938 00
Shelburne	100		500		250	300	200		1,350 00
Victoria	3,200	550	5,000	200	500	375	3,400	10 00	13,235 00
Yarmouth			100						100 00
Total	22,010	5,086	77,810	270	7,735	5,693	33,675	291 46	152,570 46
Ontario.									
Alnwick	3,580	80	7,500	2,605	70	2,405	27	8,004 00	24,271 00
Cape Croker	5,000	1,000	20,000	16,000	2,100	150		22,435 02	66,685 02
Caradoc	29,825	2,075	74,020	8,075	98	410	1,045	3,774 97	139,322 97
Chapleau	500		1,800		500	25,000		12,932 00	40,732 00
Christian Island	2,930	400	2,500		250	450	600	6,463 95	13,593 95
Fort Frances	5,595	190	39,800	300	40,300	31,400	4,500	10,925 16	133,010 16
Fort William	1,400	200	34,000	600	20,000	30,000	3,000	12,527 10	101,727 10
Georgina Island	4,190	800	3,500	382		55	1,500	1,689 06	12,116 06
Golden Lake	900	1,000	4,000	95		1,000	1,000	10 47	8,005 47
Gore Bay	24,500		26,600	500	350	500	2,650	11,984 79	67,084 79
Kenora	8,531	400	37,884	60	31,028	40,705	16,790	11,465 93	146,863 93
Manitowaning	88,615	14,130	93,780	4,450	9,050	7,280	29,585	20,345 57	267,235 57
Moravian	12,250	1,200	32,000	425	200	200	200	7,205 59	53,680 59
New Credit	35,755	2,500	25,600	4,279	100	300	3,000	5,947 53	77,481 53
Parry Sound	7,450	1,375	36,000	1,000		1,125		9,534 23	56,484 23
Rama	6,690	400	15,000	300	2,200	2,200	3,000	3,370 67	33,160 67
Rice Lake	18,000	5,200	13,700	750	900	6,000	3,775	3,066 19	51,391 19
Sarnia	39,682	4,500	47,050	3,700			5,100	10,659 73	110,691 73
Saugeen	8,000	700	18,500	4,000	650	1,500	2,000	17,598 45	52,948 45
Sault Ste Marie	14,570	1,930	19,500		10,700	7,000	9,500	14,192 19	77,392 19
Savanne	3,820	40	35,024		34,427	65,383	9,190	7,136 13	155,020 13
Scugog	1,767	575	800	80	40	600	1,100	765 16	5,727 16
Six Nations	500,980		210,890	5,000				48,166 86	765,036 86
Sturgeon Falls	6,600	950	23,000		4,000	44,000	7,000	56,456 61	142,006 61
Thessalon	11,991	900	33,000	800	2,525	3,900	1,175	6,635 93	60,926 93
Tyendinaga	116,970	5,000	48,700	8,813	2,000	425	750	6,425 31	191,910 33
Walpole Island*								2,827 02	2,827 02
Total	960,091	45,545	904,148	62,214	161,488	271,988	106,487	322,545 62	2,834,506 62
*Amalgamated with Sarnia Agency.									
Prince Edward Island	2,150	150	550		950	55	6,500		10,355 00

TABLE No. 6.—SOURCES AND VALUE OF INCOME.—*Continued.*

Agencies.	Value of Farm Products, including Hay.	Value of Beef sold, also of that used for food.	Wages Earned.	Received from Land Rentals and from Timber.	Earned by Fishing.	Earned by Hunting and Trapping.	Earned by other Industries and Occupations	Annuities paid, and Interest on Indian Trust Funds.	Total Income of Indians.
QUEBEC.	$	$	$	$	$	$	$	$	$
Becancour	1,485	100	300				50	387,63	2,322 63
Bersimis	675	125	1,200	2,019	775	39,000	2,000	304 47	46,098 00
Cacouna			2,400	375	20	350	1,500	458 90	5,103 90
Caughnawaga	105,200	15,000	200,000	6,666	400	300	12,000	1,739 24	341,305 24
Jeune Lorette			25,000			1,000	18,000	831 30	44,831 30
Maniwaki	6,847	1,023	32,258	8,722	302	12,332	1,079	2,658 72	65,221 72
Maria	876	160	4,500	150	275	350	1,600		7,911 00
Minigan					2,400	8,000			10,400 00
Oka	7,100	1,800	18,800		100	100	400	549 80	28,849 80
Pierreville	2,000	1,800	340		75	300	1,500	342 87	6,357 87
Pointe Bleue	16,000	2,000	10,500		1,200	35,000	2,500	440 32	6,740 32
Ristigouche	15,740	800	32,000	3,400	250	750	8,500	298 68	61,738 68
Seven Islands					330	12,000			12,330 00
St. Regis	59,500	14,000	82,550	339	3,450	2,210	14,000	3,061 21	179,110 21
Timiskaming	3,625	100	12,000		75	3,000		1,877 14	20,677 14
Total	219,048	36,908	421,848	21,671	9,652	114,692	63,129	12,950 28	899,898 28
SASKATCHEWAN.									
Assiniboine	39,067	9,660	1,675			800	7,425	1,925 46	61,452 46
Battleford	61,582	11,602	14,275	7,580	3,450	15,150	3,400	9,078 09	126,117 09
Carlton	40,658	15,342	18,036		3,218	27,978	14,285	7,938 31	127,455 31
Crooked Lake	89,387	12,072	4,800	13,594	1,250	2,100		14,631 18	137,834 18
Duck Lake	52,840	13,450	8,440	750	330	18,500	2,250	7,444 50	104,004 50
File Hills Agency	17,870		1,800			1,350	2,300	1,695 84	25,015 84
File Hills Colony	45,300		9,000			250	1,000		55,550 00
Moose Mountain	28,313	3,000	600	1,200	300	2,000	4,200	367 00	57,980 00
Moose Woods	7,500	8,883	1,800			600	1,000	3,675 91	23,458 91
Onion Lake	27,742	17,450	9,650		9,000	19,000	5,500		88,342 00
Pelly	50,700	3,200	21,500	2,430		9,200	3,450	5,856 02	96,336 02
Qu'Appelle	103,494	12,476	10,775		2,550	2,300	12,010	9,129 45	152,734 46
Touchwood	58,654	17,669	25,310		10,000	51,762	21,063	12,334 46	196,792 46
Wood Mountain	1,712		2,020	100		50	150	6,296 24	10,328 24
Isle à la Crosse District						24,000		10,970 00	34,970 00
Total	625,719	124,804	129,681	25,654	30,098	193,040	78,033	91,342 46	1,298,371 46

RECAPITULATION.

Provinces.	Value of Farm Products, including Hay.	Value of Beef sold, also of that used for food.	Wages Earned.	Received from Land Rentals and from Timber.	Earned by Fishing.	Earned by Hunting and Trapping.	Earned by other Industries and Occupations	Annuities paid, and Interest on Indian Trust Funds.	Total Income of Indians.
	$	$	$	$	$	$	$	$	$
Alberta	397,673	118,296	138,680	42,925	5,085	32,741	90,508	90,004 27	915,912 27
British Columbia	638,305	72,360	408,452	8,309	651,130	278,036	246,365	18,630 29	2,321,587 29
Manitoba	268,797	21,070	109,180	2,656	77,735	136,840	46,825	68,237 08	731,340 08
New Brunswick	8,253	200	36,100	2,600	7,070	1,335	4,425	2,215 39	62,198 39
Nova Scotia	22,010	5,086	77,810	270	7,735	5,693	33,675	291 46	152,570 46
Ontario	960,091	45,545	904,148	62,214	161,488	271,988	106,487	322,545 62	2,834,506 62
Prince Edward Island	2,150	150	550	.....	950	55	6,500	.....	10,355 00
Quebec	219,048	36,908	421,848	21,671	9,652	114,692	63,129	12,950 28	899,898 28
Saskatchewan	625,719	124,804	129,681	25,654	30,098	193,040	78,033	91,342 46	1,298,371 46
*Treaty 8 District	.....	.....	.....	.....	.....	280,000	.....	10,125 00	290,125 00
Total	3,142,046	424,419	2,226,449	166,290	950,943	1,314,420	675,947	616,341 85	9,516,864 85

*Estimated value of fur catch in Treaty No. 8 District.

SCHOOL STATEMENT.

STATEMENT of Indian Day Schools in the Dominion (from which returns have been received) for the Fiscal Year ended March 31, 1919.

NOTE.—The "Standard" indicates the classification of the pupils according to the reading-book used and therefore shows the degree of general advancement in all the studies prescribed by the curriculum, thus.—

Standard I.....First Reader, Part I.
Standard II.....First Reader, Part II.
Standard III.....Second Reader.
Standard IV.....Third Reader.
Standard V.....Fourth Reader.
Standard VI.....Fifth Reader.

School.	Reserve.	Agency.	Teacher.	Denomination.	Number on Roll.			Average Attendance.	Standard.					
					Boys.	Girls.	Total.		I	II	III	IV	V	VI
NOVA SCOTIA.														
Afton	Afton	Antigonish County	William J. Rogers	Roman Catholic	9	9	18	11	5	2	8	2	1	
Eskasoni	Eskasoni	Cape Breton "	Mary Agnes E. Gorman	"	14	15	29	14	18	5	2	2	2	
Sydney	Sydney	" "	Catherine Gallagher	"	19	16	35	18	9	18	4	4	.....	
Millbrook	Millbrook	Colchester "	Miss Jessie Scott	"	8	16	24	10	17	4	1	2	...	
[1]Halfway River	Franklin Manor	Cumberland "	Miss Janet M. Fullerton	"	...	1	1	13	...	...	...	...	...	1
Bear River	Bear River	Digby "	Miss Mary A McGinty	"	9	5	14	8	7	2	1	2	1	1
Shubenacadie	Indian Brook	Hants "	Miss Mary A. Shortt	"	8	11	19	6	12	2	2	1	2	
Whycocomagh	Whycocomagh	Inverness "	Mrs. Annie MacNeil	"	9	22	31	18	22	6	...	...	3	
New Germany	Lunenburg	Lunenburg "	Mrs. Rose L. Ford	"	4	6	10	7	4	.....	2	1	1	2
Indian Cove	Fishers' Cove	Pictou "	Miss Gertrude McGirr	"	11	15	26	13	7	7	..	8	3	1
Salmon River	Salmon River	Richmond "	Miss Mary McDonald	"	8	12	20	7	..	16	3	...	1	
Middle River	Middle River	Victoria "	John A. MacRae	"	13	9	22	11	19	1	2	...	...	
[1]Bishopville	At Bishopville	Kings "	Miss Florence Morris	"	2	1	3	1	.....	1	1	1	.	
[1]North River Road		Kings "	Miss Florence A. Lyons	"	1	2	3	1	3	...	.	...	...	
Total, Nova Scotia					115	140	255	126	123	61	26	23	14	5
PRINCE EDWARD ISLAND.														
Lennox Island	Lennox Island	P.E.I. superintendency	Jacob Sark	Roman Catholic	15	14	29	10	10	8	9	2	.....	
Rocky Point	Rocky Point	"	Miss Mary A. Mitchell	"	6	8	14	5	2	5	5	2	..	..
Total, Prince Edward Is.					21	22	43	15	12	13	14	4	....	..
NEW BRUNSWICK.														
[2]Big Cove	Big Cove	Northeastern	Miss Margaret M. Ronch	Roman Catholic	21	13	34	17	11	8	14	...	1	
Burnt Church	Church Point	"	Miss Rebecca Isaacs	"	27	18	45	19	14	10	12	7	2	
Eel Ground	Eel Ground	"	Miss Delia M. Taylor	"	11	19	30	11	9	9	0	6	.....	.. ..
Eel River	Eel River	"	Miss Antoinette Blanchard	"	8	8	16	9	3	4	1	3	5	.....
Red Bank	Red Bank	"	Miss Ena A. Cormier	"	8	9	17	12	7	0	4	.....	.....	.....
Kingsclear	Kingsclear	Southwestern	Miss Ida M. McDermott	"	9	9	18	10	3	1	8	5	1	.
Oromocto	Oromocto	"	Miss Alexa McDonough	"	9	6	15	6	6	5	3	.	1	.
St. Mary's	St. Mary's	"	Miss Mary T. Hughes	"	10	15	25	18	8	3	8	3	3	.
Woodstock	Woodstock	"	Miss Miriam G. Dunphy	"	9	6	15	8	5	3	2	4	..	1
Dorchester (Superior)	Fort Folly	Northern	Miss Nellie L. Trites	"	6	5	11	7	8	3	...	.....		

Edmundston	At Edmundston	"	Miss Annie Michaud	"	7	5	12	11	2	1		4	3	2
Tobique	Tobique	"	Miss Ethel F. McGrand	"	18	20	38	20	13	3	15	6	1	
Total, New Brunswick					143	133	276	148	89	56	73	38	17	3
QUEBEC.														
Caughnawnga—Boys	Caughnawaga	Caughnawaga	Sr. Mary Gabriel (super. prin.) Sr. Mary Agnes Teresa (1st teacher) Sr. Mary Zita (2nd teacher) Sr. Mary Lutgarde (3rd teacher) Miss Margaret Regis(4th teacher) Sr. Mary Gabriel (super. prin) Sr. M. Margaret of Scotland (1st teacher)	Roman Catholic	129		129	96	56	34	11	20	2	6
Caughnawaga—Girls	"	"	Sr. Mary Frances (2nd teacher) Sr. Mary Ann Catherine 3rd teacher) Miss Annie Lefebvre (4th teacher)	"		143	143	95	61	32	20	25	5	
Caughnawnga—Bush	"	"	Mrs A. Beauvais	"	12	12	24	18	8	9	7			
Caughnawnga—St. Isidore	"	"	Miss Mae Doherty	"	7	9	16	8	9	4		3		
Caughnawaga—Mission	"	"	Miss Etta J. Smith	Methodist	9	10	19	11	13	2	4			
Bersimis	Bersimis	Bersimis	Sr. St. Eugene (prin.) Sr. St. Raphael (asst.)	Roman Catholic	48	37	85	32	45	34	6			
[1]Escoumains	At Escoumains	"	Joseph L. Otis	"	5	6	11	8	11					
Pointe Bleue	Pointe Bleue	Pointe Bleue	Sr. St. Vincent de Paul (prin.) Sr. St. Louis (asst.)	"	47	49	96	55	54	8	11	12	7	4
Ristigouche	Ristigouche	Ristigouche	Sr. Mary of the Holy Rosary (prin.) Sr. Mary of St. Joseph (asst.)	"	37	38	75	47	16	17	25	12	5	
St. Frances	Pierreville	Pierreville	H. L. Masta	Church of England	6	8	14	5	9	1	3			
St. Frances	"	"	Sr. L. Woods (superior) Sr. Mary Josephine (1st teacher) Sr. Mary of Mercy 2nd teacher) Sr. Mary Donatus (3rd teacher)	Roman Catholic	26	30	56	40	9	12	24	3	4	4
St. Regis Island	St. Regis	St. Regis	Miss Annie Grimes	Undenominational	19	10	29	17	6	6	11	4	2	
St. Regis Village	"	"	Miss Loretta McGrath (prin.) Miss Lucie A. Foran(asst.	"	33	32	65	32	30	10	11	10	4	
Chenail	"	"	Miss Aileen Foran	"	23	16	39	20	18	13	5	3		
Chetlnin	"	"	Miss Mary McParland	"	13	10	23	13	2	9	8	2	2	
Cornwall Island	"	"	Miss Geneva Legarde	"	27	28	55	19	39	4	12			
Oka Country	Oka	Oka	Miss Frances Saunders	Methodist	13	14	27	9	4	9	8	3	2	1
Congo Bridge	Maniwaki	Maniwaki	Miss Helen J. White	Undenominational	6	10	16	7	8	4	3	1		

[1]White School, attended by Indian children. [2]Closed December quarter, 1918, no teacher.

SCHOOL STATEMENT.—*Continued.*

STATEMENT of Indian Day Schools in the Dominion (from which returns have been received) for the Fiscal Year ended March 31, 1919.

School.	Reserve.	Agency.	Teacher.	Denomination.	Number on Roll.			Average Attendance.	Standard.					
					Boys.	Girls.	Total.		I	II	III	IV	V	VI
QUEBEC,—*Con.*														
Maniwaki	Maniwaki	Maniwaki	Miss M'garet McCaffrey	Roman Catholic	16	16	32	15	16	6	3	4	3	
Maria	Maria	Maria	Miss Josephine Audet	"	8	16	24	13	6	3	6	3	3	3
Lorette	Lorette	Lorette	Sr. St. Elizabeth (pria.)											
			Sr. St. Agathe (asst.)	"	38	30	68	58	25	30	7	6		
[1]Long Point	At Long Point	Timiskaming	Miss Jane McBride	"	7	14	21	10	21					
[1]Waswanapi	At Waswanapi	"	Harry Cartlidge	Church of England	14	20	34	24	34					
[2]Timiskaming	Timiskaming	"	Miss Margaret Delorme	Roman Catholic	9	15	24	9	7	6	4	7		
Hunter's Point	At Hunter's Point	"	Miss Georgina Hunter	Undenominational	16	14	30	11		7	8	5	5	5
[1]Wolf Lake	At Wolf Lake	"	Miss Agnes Robinson	Roman Catholic	5	13	18	17	2	1	4	11		
Rupert's House	At Rupert's House	James Bay	Miss S. N. Dixon	Church of England	16	11	27	14	24		3			
[1]Mistassinni	At Lake Mistassinni	"	Charles Iserhoff	"	22	32	54	19	40	14				
Total, Quebec					611	643	1,254	722	573	275	204	134	44	24
ONTARIO.														
Alnwick	Alnwick	Alnwick	Frank J. Joblin	Methodist	28	23	51	26	14	13	15	2	7	
Cake Croker	Cape Croker	Cape Croker	Miss Mary Moffitt	Undenominational	13	11	24	19	4	2	9		9	
Port Elgin	"	"	Miss M. C. Schultz	"	11	14	25	9	8	6	6	3	2	
Sidney Bay	"	"	Miss Isabella McIvor	"	9	9	18	7	2	5	4	7		
Bear Creek	Caradoc	Caradoc	Miss Lillibelle Graham	"	8	19	27	10	14	2	4	5	2	
Back Settlement	"	"	Lyman Fisher	"	13	18	31	14	13	4	5	3	6	
[3]Muncey	"	"	Miss Mary McArthur	Church of England	10	13	23	13	17	3	3			
River Settlement	"	"	Miss Gretta M. Iveson	Undenominational	13	12	25	9	15	5	3	2		
Oneida No. 2	Oneida	"	Levi T. Doxtater	Church of England	27	31	58	20	41	6	6	4	1	
Oneida No. 3	"	"	Miss Tena M. Brodie	Methodist	27	23	50	13	36	6	4	4		
[4]Franz (Public)	At Franz	Chaplean	Miss Olive McFarlane	Undenominational	3	8	11	7	7	3	1			
Manitou Rapids	Manitou Rapids	Fort Frances	Mrs A. Spencer	Church of England	17	13	30	7	19	5	6			
Gull Bay	Gull Bay	Fort William	D. Ducharme	Roman Catholic	12	12	24	11	8	7	8	1		
Mission Bay (Squaw Bay)	Fort William	"	Miss Celina Trottier	"	7	9	16	8	6	4	2	2		
Mountain Village	"	"	Miss Bessie Flood	"	14	11	25	11	10	4	5	4	2	
[5]Pic River	Pic River	"	Miss Celina Trottier	"	11	14	25	9	7	6	6	6		
[6]Red Rock	Nipigon	"	Mrs. A. McLaren	"	9	11	20	10	7	8	4	1		
Georgina Island	Georgina Island	Georgina Island	Mrs. E. E. Spencer	Methodist	12	7	19	13	8	4	4	2	1	
[4]Calabogie S.S. No. 5	At Calabogie	Golden Lake	Miss V. Doyle	Roman Catholic	4	5	9	3	4	2	2	1		
Golden Lake	Golden Lake	"	Miss Catherine M. Goulet	"	10	13	23	10	11	3	2	6	1	
Sheshegwaning	Sheshegwaning	Gore Bay	Edwin Weeks	Church of England	9	8	17	9	5		5	5		2
Sheshegwaning	"	"	Miss Elizabeth A. Leusch	Roman Catholic	11	14	25	16	10	7	2	5	1	
West Bay	West Bay	"	Miss Rose Fagan	"	20	20	40	31	14	14	12			
Buzwah	Buzwah	Manitowaning	Miss Lila A. Dodd	"	18	8	26	12	14	7	2	3		
Kaboni	Kaboni	"	Miss Marcella R. Hickey	"	11	15	26	15	15	4	6	1		
Sheguiandah	Sheguiandah	"	Miss Madge A. Ferris	Church of England	7	11	18	9	12		6			

[7]South Bay	South Bay	"	Miss Marcella R. Hickey	Roman Catholic	8	3	11	6	7	3		1		
Sucker Creek	Sucker Creek	"	Miss Bertha M. Wedgerfield	Church of England	9	17	26	12	15	4	1	4	2	
[7]Whitefish Lake	Whitefish	"	Miss Lillie Fitzpatrick	Roman Catholic	21	10	31	18	14	16	1			
[8]Whitefish River (coiob'd)	Whitefish River (surrendered)	"	Duncan Bell	Church of England	5	8	13	7	6	4	3			
[7]Wikwemikong	Manitoulin Island	"	Joe St. James (princ.)[3] / Angela Morris (asst.)	Roman Catholic	40	30	70	40	44	12	12	2		
Moraviantown	Moravian	Moravian	Mrs. Mary Yarwood	Undenominational	33	27	60	22	27	12	9	10	2	
New Credit	New Credit	New Credit	Miss Aleene M. Bertram	"	15	16	31	15	10	2	13	5	1	
[1]Dokis	Dokis	Nipissing	Miss Alice Bitawanikwat	Roman Catholic	3	4	7	3	6	1				
Garden Village	Nipissing	"	Mrs. Alex. Ladouceur	"	16	24	40	17	17	13	7	3		
[4]Mattawa	At Mattawa	"	Sister Mary Sylvester	"	25	24	49	25	18	14	2	8	5	
[1]Timagami	At Bear Island	"	Miss Mary Gallagher	Undenominational	20	10	30	22	30					
Gibson	Watha	Parry Sound	James Oliver, M.A.	Methodist	12	9	21	9	15	4	1		1	
[9]Henvey Inlet	Henvey Inlet	"	Miss L. A. Keeshig	Undenominational	5	7	12	6	8	2	2			
Ryerson	Parry Island	"	Miss Adelaide McIntosh	"	18	14	32	15	18	7	7			
[10]Shawanaga	Shawanaga	"	Joseph Partridge	"	11	12	23	15	12	2	7	2		
Christian Island	Christian Island	Penetanguishene	Wm. E. Jones	Methodist	30	25	55	24	21	11	14	9		
[11]Moose Deer Point	At Moose Deer Point	"	Miss Lucy Toby	Undenominational	7	7	14	10	3	3	4	4		
Rama	Rama	Rama	Miss Vera McPhaden (Prin.) / Miss Eva McBain (Asst)	Methodist	21	24	45	30	20	9	7	4	5	
[4]Hiawatha	Rice Lake	Rice Lake	Merrell A. Upton	Undenominational	5	14	19	12	7	6	3	3		
Mud Lake (Chemong)	Mud Lake	"	Alfred McCue	"	18	17	35	19	17	5	6	7		
Kettle Point	Kettle Point	Sarnia	Mrs. Angus George	"	18	15	33	15	14	11	3	3	2	
Stony Point	Stony Point	"	Miss Agnes A. Weaver	"	3	8	11	5	3	2	5	1		
St. Clair	Sarnia	"	Miss Alice M. Matthews	Methodist	18	15	33	20	19	6	6	2		
French Bay	Saugeen	Saugeen	T. J. Wallace	Undenominational	15	12	27	16	15		4	6	2	
Saugeen	"	"	Miss Isabella Ruxton	"	18	14	32	20	13	4	10	3	2	
Scotch Settlement	"	"	Mrs. B. Robb	"	17	16	33	18	17	6	3	7		
[6]Batchawana	Batchawana Bay	Sault Ste. Marie	Miss Isabelle Peltier	Roman Catholic	15	9	24	10	16	4	4			
Garden River (R.C.)	Garden River	"	Miss Margaret M. Daly (Prin.) / Miss Jeannie McDermott (Asst.)	"	30	37	67	38	21	16	18	10	2	
Garden River (C.E.)	"	"	L. F. Hardyman	Church of England	9	11	20	12	9	8	3			
Goulais Bay	Goulais Bay	"	Miss Agnes Kelly	Roman Catholic	9	10	19	13	8	5	3	3		
Six Nations No. 1	Six Nations	Six Nations	Miss Mary H. Jamieson	Undenominational	27	24	51	26	16	9	8	8	10	
" No. 2	"	"	Miss Nina M. Alexander (Prin.) / Miss Ethel Alexander (Asst.)	"	46	47	93	52	31	12	20	18	12	
" No. 3	"	"	Miss Nora E. Jamieson	"	33	27	60	35	21		22	7	10	
" No. 4	"	"	Miss Minnie Martin	"	21	23	44	17	18	11	8	3	5	
" No. 5	"	"	John R. Lickers	"	25	14	39	16	10	9	16	2	2	
" No. 6	"	"	Miss Grace Martin	"	20	20	40	13	28	2	7	1	2	
" No. 7	"	"	Arthur Alexander	"	27	28	55	31	23	8	14	7	3	
" No. 8	"	"	Miss Julia L. Jamieson	"	16	23	39	21	12	7	7	11	2	
" No. 9	"	"	Mrs. R. E. Reece	"	19	21	40	15	25	8	6	1		
" No. 10	"	"	S. A. Anderson	"	23	20	43	16	21	4	7	7	4	
" No. 11	"	"	Miss Inez V. Jennings	"	29	17	46	16	18	15	7	6		

[1]Open during summer months only. [2]Closed during December quarter, 1918.
[3]Re-opened Oct. 1, 1918, having been closed since June 30, 1911. [4]White School, attended by Indian children. [5]Closed July 31, 1918. Teacher transferred to Mission Bay School. [6]Closed rom September 30, 1918. [7]Closed June 30, 1918. Teacher transferred to Kaboni School. [8]Combined white and Indian Day school.
[9]Closed from November, 1918; no teacher. [10]Closed June and September quarters, 1918; no teacher. [11]Closed from June 30, 1918; no teacher.

SCHOOL STATEMENT.—*Continued.*

STATEMENT of Indian Day Schools in the Dominion (from which returns have been received) for the Fiscal Year ended March 31, 1919.

School.	Reserve.	Agency.	Teacher.	Denomination.	Number on Roll.			Average Attendance.	Standard.					
					Boys.	Girls.	Total.		I	II	III	IV	V	VI
ONTARIO—*Concluded.*														
[1]Sagamook	Spanish River	Thessalon	Miss Tillie Fitzpatrick	Roman Catholic	7	6	13	7	13					
[2]Serpent River	Serpent River	"	Miss Nellie Gallagher	"	10	12	22	12	18	3	1			
[3]Graham S.S. No. 5	Twp. of Graham	"	A. Marier	"	2		2	1	2					
[4]Abitibi	At Abitibi	Treaty No. 9	Miss Christina Polson	"	20	24	44	7	36	7	1			
Albany River	At Fort Albany	"	Rev. John Griffin	Church of England	42	33	75	31	63	8	4			
Fort Hope	At Fort Hope	"	Rev. G. Richards	"	16	18	34	9	34					
Moose River (French Post)	At Moose River	"	Fred Marks	"	14	14	28	12	21	5	2			
Moose Fort	At Moose Fort	"	Miss Lucy I. Barker	"	12	15	27	15	23	3	1			
Tyendinaga (Eastern)	Tyendinaga	Tyendinaga	Miss L. J. Warren	Undenominational	24	15	39	23	13	12	11	2	1	
" (Western)	"	"	Miss Jennie P. Thompson	"	13	14	27	10	13	7	4	2	1	
" (Central)	"	"	Miss Marguerite Millar	"	19	8	27	13	15	1	5	4	2	
" (Mission)	"	"	Mrs. Irene Brant	"	23	9	32	15	24	2	3	3		
Walpole Island No. 1	Walpole Island	Walpole Island	Miss Florence Macdonald	Church of England	22	29	51	22	31	10	5	5		
" No. 2	"	"	Harold D. Watts	Methodist	22	20	42	15	26	4	8	3	1	
Total, Ontario					1,340	1,282	2,622	1,265	1,328	469	457	253	111	4
MANITOBA.														
Black River	Black River	Clandeboye	Geo. Slater, jr.	Church of England	7	9	16	7	10	3	3			
Brokenhead	Brokenhead	"	Mrs. Florence McReynolds	"	11	7	18	8	15	1	2			
[4]Deer Lake	Deer Lake	"	Alex. Murdock	Methodist	21	11	32	19	24	8				
[4]Pekangekum	Pekangekum	"	Alex. Crate	"	16	11	27	19	27					
Fort Alexander (Upper)	Fort Alexander	"	Rev. Chas. H. Fryer	Church of England	13	7	20	10	14	3	3			
Hollowwater River	Hollowwater River	"	Mrs. Theophile Bellefeuille	"	9	10	19	9	13	6				
[3]Patapun (Public)	St. Peter's	"	R. W. M. Ellison	Undenominational	10	8	18	8	4	1	0	7		
St. Peter's (North)	"	"	Peter Harper	Church of England	4	9	13	5	5	3	2	1	2	
[4]Little Grand Rapids	Little Grand Rapids	"	Mrs. Mary J. Nanakwap	Methodist	26	38	64	34	64					
[3]Peguis (Provincial White)	Surrendered part of St. Peter's Res.	"	Alexander Cowan	Undenominational	9	13	22	10	2	8	9	2	1	
Poplar River	Poplar River	"	William Lee	Methodist	17	10	27	3	22	5				
Bloodvein River	Bloodvein	"	Charles Mason	"	12	10	22	9	18	2	2			
Grand Rapids	Grand Rapids	"	F. W. Gelling	"	14	13	27	12	10	6	3	8		
[5]Berens River (R.C.)	Berens River	Fisher River	Rev. Frederic Leach, O.M.I	Roman Catholic	14	11	25	17	19	5	1			
Berens River (Prot.)	"	"	Mrs. A. A. Smith {Miss J. Y. Huntsman}	Methodist	24	12	36	17	14	10	5	5	2	

Fisher River	Fisher River	"	(Prin.) Miss M. E. Williams (Asst.)	"	23	46	69	35	38	14	11	6	
Peguis (North)	Peguis	"	Nathanial Asham	Church of England	12	13	25	9	9	8	8		
Peguis (South)	"	"	Miss Hattin Thomas	"	23	12	35	13	16	8	7	3	1
Oak River Sioux	Oak River	Griswold	Miss Rowena Havard	"	14	8	22	10	3	10	6	3	
[4]Crane River (combined)	At Crane River	Manitowapah	J. W. Mallinson	Undenominational	8	5	13	6	13				
Fairford Improved	Fairford	Manitowapah	Augustus Hyson	Church of England	12	15	27	13	18	7	2		
Lake St. Martin	Lake St. Martin	"	Jno. E. Favelle	"	13	16	29	18	19	5	2	3	
Little Saskatchewan	Little Saskatchewan	"	Colin Sanderson	"	19	9	28	9	19	8	1		
[7]Pine Creek	Pine Creek	"	Rev. G. Leonard	Roman Catholic	12	8	20	18	10	4	4	1	1
Waterhen River	Waterhen River	"	Jos. Inglott	"	10	4	14	4	11	2	1		
[8]Oxford House	At Oxford House	Norway House	Mrs. L. E. Atkinson	Methodist	35	22	57	30	57				
[9]Cross Lake	Cross Lake	"	Miss S. Z. Richardson	"	28	10	38	12	29	8	7	3	
Island Lake	Island Lake	"	John W. Niddrie	"	17	8	25	13	24		1		
Jack River	Jack River	"	Mrs. Mabel Marshall	Church of England	27	18	45	18	29	10	6		
Nelson House	At Nelson	"	Rev. W. E. W. Hutty	Methodist	6	16	22	10	8	10	4		
Rossville	Norway House	"	Miss Emily N. Roynn	"	11	15	26	15	16	6	4		
Big Eddy	Pas	Pas	Mrs. S. E. McGillivray	Church of England	19	13	32	17	26	4	2		
Chemawawin	Chemawawin	"	J. G. Kennedy	"	10	12	22	7	17		2	3	
[6]Moose Lake (combined)	Moose Lake	"	Miss Margery Burrows	"	10	12	22	7	16	4	2		
Red Earth	Red Earth	"	Isaiah Badger	"	12	10	22	16	17	2	2	1	
Shoal Lake	Pas	"	Louis Young	"	6	12	18	11	13	3	1	1	
Lower Roseau River	Roseau River	Portage la Prairie	Miss Emma Godin	Roman Catholic	8	11	19	5	11	4	4		
Roseau Rapids	Roseau Rapids	"	Alfred H. Cheales	Undenominational	6	8	14	5	5	5	1	2	1
Swan Lake	Swan Lake	"	Miss Jessie G. Bruce	Presbyterian	10	8	18	5	10	6	2		
Total, Manitoba					558	490	1,048	493	686	189	116	48	8
SASKATCHEWAN.													
Assiniboine	Assiniboine	Assiniboine	Miss Grace I. Frame	Undenominational	10	14	24	7	12	1	9		2
Little Pines	Little Pines	Battleford	Rev. M. B. Edwards	Church of England	10	4	14	7	7	7			
Poundmaker's	Poundmaker	"	John M. Seeber	Roman Catholic	9	5	14	9	8	4	2		
Red Pheasant	Red Pheasant	"	Mrs. G. E. Marshall	Church of England	22	9	31	13	18	11		1	1
Ahtahkakoops	Ahtahkakoops	Carlton	H. Hutchinson	"	13	17	30	14	13	6	7	3	1
Big River	Kenamotayoos	"	Mrs. G. M. Pruden	"	12	8	20	8	15		4	1	
[10]Mistawasis	Mistawasis	"	E. Elgin Milligan	"	4	6	10	5	6	2			2
Montreal Lake	Montreal Lake	"	John R. Settee	"	20	23	43	18	24	12	7		
Sturgeon Lake	Wm. Twatts	"	Henry W. Shaw	"	14	9	23	9	10	7	6		
Fort a la Corne (South)	James Smith	Duck Lake	John Leonard Lowe	"	10	12	22	10	12	9		1	
John Smith	John Smith	"	P. H. Gentleman	"	15	12	27	19	11	5	3	4	
White Bear	White Bear's	Moose Mountain	Miss Lillie Morrice	Presbyterian	11	15	26	13	15	4	6	1	
[11]White Cap Sioux	Moose Woods	Moose Woods	Charles Hawk	Methodist	9	7	16	10	11	5			
Cold Lake	Cold Lake	Onion Lake	Sister Eugenie	Roman Catholic	20	16	36	19	31	5			
Frog Lake	Frog Lake	"	Charles Quinney	Church of England	14	11	25	8	21	1	3		
Long Lake	Keekewins	"	J. Francis Dion (Prin.) Mrs. J. F. Dion (Asst.)	Roman Catholic	9	7	16	6	16				
Cote's Improved	Cote	Pelly	Miss A. E. Walker (teacher) Miss Sarah Dunbar (ass...	Presbyterian	22	12	34	19	22		10	1	1
Keys	Keys	"	B. H. L. Dance	Church of England	4	2	6	4	5	1			

[1] Closed June 30, 1918, teacher transferred to Whitefish Lake School. [2] School burned November 5, 1918. Closed balance of year. [3] White school, attended by Indian children.
[4] Open during summer months only. [6] New school, opened August, 1918. [8] Combined white and Indian day school.
[7] Indian children attend classes in Pine Creek Boarding School. [8] Re-opened August 26, 1918. [9] Closed during September quarter 1918.
[10] Only open June 1 to August 30, 1918. [11] Closed during September and December quarters, 1918.

SCHOOL STATEMENT—*Continued.*

STATEMENT of Indian Day Schools in the Dominion (from which returns have been received) for the Fiscal Year ended March 31, 1919.

School.	Reserve.	Agency.	Teacher.	Denomination.	Number on Roll.			Average Attendance.	Standard.					
					Boys.	Girls.	Total.		I	II	III	IV	V	VI
SASKATCHEWAN—Con.														
Keeseekouse	Keeseekouse	Pelly	Rev. N. A. Ruelle, O.M.I.	Roman Catholic	12	8	20	12	7	2	5	6		
Day Stars	Day Stars	Touchwood Hills	W. H. Brookfield-Scharpe	Church of England	8	4	12	9	4	2	3	3		
Stanley	Amos Charles	Treaty No. 10	Mrs. Mabel Morris	"	14	17	31	11	24	7				
Total, Saskatchewan					262	218	480	229	292	91	65	21	7	4
ALBERTA.														
Paul's	White Whale Lake	Edmonton	Fred J. Dodson	Methodist	8	12	20	2	20					
Samsons	Samsons'	Hobbema	Rev. Robt. Steinhauer	"	16	26	42	20	33	6	3			
Goodfish Lake	Pakan	Saddle Lake	Rev. W. R. Cantlon	"	12	10	22	11	13	4	4	1		
[1]Saddle Lake	Saddle Lake	Saddle Lake	Peter Erasmus	"	16	4	20	10	17	3				
Total, Alberta					52	52	104	43	83	13	7	1		
BRITISH COLUMBIA.														
Fort Babine	Fort Babine	Babine	Jos. Morrissey	Roman Catholic	22	25	47	18	20	14	10	2	1	
Gitwingak	Kitwingar	"	Miss F. B. Kemp	Church of England	25	17	42	11	22	6	5	8	1	
Glen Vowell	Sicedach	"	Miss Alice Jackson	Salvation Army	13	12	25	13	10	7	6	2		
Hazelton	Gitamaksh	"	Miss Eliz. J. Soal	Church of England	10	17	27	11	7	5	8	3	3	1
Kitsegukla	Kitsegukla	"	Miss M. B. Wright	Methodist	15	14	29	13	24	3	2			
Kitselas (New Town)	Kitselas	"	J. H. Young	"	5	6	11	7	8		3			
[2]Kispiox	Kispiox	"	Miss Agnes Menzies	"	12	14	26	10	14	7	4	1		
[3]Meanskinisht	At Meanskinisht	"	Mrs. A. Tordiffe	"	3	8	11	5	5		3	3		
Rocher Deboule	At Rocher Deboule	"	Sidney Browning	Roman Catholic	9	16	25	15	9	11	4	1		
Bella Bella	Bella Bella	Bella Coola	Miss Kate Tranter	Methodist	24	18	42	10	34	2	5	1		
Bella Coola	Bella Coola	"	Miss Mary A. Gibson	"	13	8	21	4	16	4	1			
China Hat	China Hat	"	George Edgar	"	12	10	22	7	17	5				
[4]Hartley Bay	Hartley Bay	"	Rev. John Gibson	"	6	10	16	12	1	4	4	5	2	
Kitamaat	Kitamaat	"	Miss Eunice Heather	"	21	17	38	11	31	3	3		1	
[5]Kitkahtla	Kitkahtla	"	Redmond R. Johnson	Church of England	17	14	31	13	15	9	5	2		
Port Essington	Skeena	"	Miss Fanny J. Noble	Methodist	12	14	26	10	19	4	3			
Koksilah	Koksilah	Cowichan	C. A. Dockstader	"	4	5	9	4	7		1	1		
Nanaimo	Nanaimo	"	P. R. Kelly	"	19	12	31	21	15	5	5	3	2	1
Songhees	Songhees	"	Miss Rose A. Quigley	Roman Catholic	5	3	8	4	3	2	1	2		
Alert Bay	Nimkish	Kwawkewlth	Geo. Martin Luther	Church of England	17	9	26	17	12	6	7	1		
Boothroyd	Boothroyd	Lytton	Miss Lilly Blachford	"	12	8	20	11	5	5	9	1		
Lytton	Lytton	"	Miss Bertha Hobden	"	6	8	14	7	8	4	2			
Shulus	Sh'alus (Lower Nicola)	Kamloops	Rev. Geo. Davies	"	9	6	15	7	4	6	5			
[6]Aiyansh	Kitladamicks	Nass	Miss Sylvia Sturges	"	9	15	24	15	10	5	2	7		

Kincolith	Kincolith	Nass	Miss Alice M. Cellison	Church of England	26	21	47	22	25	11	6	5		
[7]Lakalsap	Lakalsap	"	Miss Sylvia Sturges	"	25	21	46	37	20	11	10	5		
Metlakatla	Metlakatla	"	Miss E. S. Klippert	"	22	17	39	18	20	3	6	5	5	
Port Simpson	At Port Simpson	"	Ralph A. Racklyeft Prin Mrs. R. A. Racklyeft (Asst.)	Methodist	42	44	86	25	48	25	6	6	1	
Chehalis	Chehalis	New Westminster	J. J. Maroney	Roman Catholic	23	16	39	23	16	9	13	1		
Katzie	Katzie	"	Miss Helen Coughlin	"	7	8	15	9	7	6		2		
[8]Kilgard (Public.)		"	Miss Florence E. Lawrence	Undenominational	2	3	5	2	5					
Skwah	Skwah	"	W. H. Grimshaw	"	9	10	19	9	12	3	3	1		
Sliammon	Sliammon	"	Wm. Marsden	Roman Catholic	9	18	27	15	16	2	6	2	1	
[8]Larkin (Public)	At Armstrong	Okanagan	Miss Edna T. Corson	Undenominational	2	2	4	3	1	1	1	1		
Osoyees	Osoyoos	"	Miss Christina McLeod	"	4	5	9	5	9					
[9]Massett	Massett	Queen Charlotte	A. Adams (sr. teacher) P. Hill (jr. teacher)	Church of England	46	33	79	51	68	5	6			
Skidegate	Skidegate	"	Mrs. A. L. Fakeley	Methodist	14	18	32	15	14	11	4	3		
Telegraph Creek	At Telegraph Creek	Stikine	T. A. McGarrigle	Undenominational	10	12	22	4	12	5	5			
Ucluelet	Itedse	West Coast	Miss Gertrude Lawrence	Presbyterian	9	15	24	10	22	2				
Total, British Columbia					550	529	1,079	500	611	211	164	74	17	2
NORTHWEST TERRITORIES.														
Fort Smith	At Fort Smith	Fort Smith	Sister Gadbois	Roman Catholic	6	10	16	5	6	8	1	1		
St. Davids Mission	At Fort Simpson	Fort Simpson	Mrs. W. S. Tremain	Church of England	6	6	12	4	7	2		3		
Fort Simpson	"	"	Sister McQuirk	Roman Catholic	4	4	8	8	6		2			
Total, Northwest Territories					16	20	36	17	19	10	3	4		
YUKON.														
Champagne Landing	At Champagne Landing	Yukon	W. D. Young	Church of England	14	11	25	5	25					
Moosehide	At Moosehide	"	Rev. Benjamin Totty	"	18	15	33	8	22	9	2			
Rampart House	At Rampart House	"	Jacob Njootle	"	6	9	15	4	12	3				
Teslin Lake	At Teslin Lake	"	Miss Carrie E. Bennett	"	17	9	26	8	14	10	2			
Selkirk (St. Andrews' Mission)	at Selkirk	"	Miss Kathleen Martin	"	6	10	16	4	16					
Total, Yukon					61	54	115	29	89	22	4			

[1]Only the March quarter, 1919, return received.
[2]Closed during September and December quarters, 1918. No teacher. [3]Closed from June 30, 1918. [4]Closed from November 15, 1918. [5]Closed May 1 to October 1, 1918.
[6]Closed June 30, 1918 and teacher transferred to Lakalsap.
[7]Closed during June quarter, 1918. [8]White school, attended by Indian children. [9]Closed during September quarter, 1918.

SCHOOL STATEMENT.—*Continued.*

STATEMENT of Indian Boarding Schools in the Dominion (from which returns have been received) for the Fiscal Year ended March 31, 1919.

School.	Reserve.	Agency.	Principal.	Denomination.	Number on Roll.			Average Attendance.	Standard.					
					Boys.	Girls.	Total.		I	II	III	IV	V	VI
ONTARIO.														
Chapleau	At Chapleau	Chapleau	Rev. Geo. Prewer	Church of England	23	17	40	36	26	11	2	1		
Fort Frances	At Fort Frances	Fort Frances	Rev. H. M. Brassard, O.M.I.	Roman Catholic	27	36	63	58	31	8	13	7	4	
Cecilia Joffrey	Shoal Lake	Kenora	Rev. P. T. Martin	Presbyterian	31	41	72	52	16	21	20	8	6	1
Kenora	At Kenora	"	Rev. C. Brouillet, O.M.I	Roman Catholic	33	43	76	60	30	13	11	8	10	4
Fort William Orphanage	At Fort William	Fort William	Sister M. F. Clare	"	2	8	10	5	1	4	3	2		
Albany Mission	At Fort Albany	Treaty No. 9	Rev.L.Ph. Martel,O.M.I	"	8	17	25	23	13	6	6			
Moose Fort	At Moose Fort	"	R'v.H.Haythornthwaite	Church of England	17	10	27	25	14	7	3	3		
Total, Ontario					141	172	313	259	131	70	58	29	20	5
MANITOBA.														
Birtle	At Birtle	Birtle	Mrs. S. Marshall	Presbyterian	35	36	71	64	14	21	18	10		8
Fort Alexander	Fort Alexander	Clandeboye	Rev. P. Bousquet, O.M.I	Roman Catholic	27	39	66	60	18	10	18	10	5	5
Pine Creek	Pine Creek	Manitowapah	Rev. Geo. Leonard	"	25	49	74	70	21	10	25	13	2	3
Sandy Bay	Sandy Bay	"	Rev. P. Chagnon, O.M.I	"	29	28	57	53	9	19	17	9	3	
Cross Lake	Cross Lake	Norway House	Rev. H. Boissin, O.M.I.	"	46	38	84	78	14	16	24	15	15	
Norway House	Norway House	"	Rev. Geo. F. Denyes	Methodist	50	48	98	90	35	10	10	25	14	4
Mackay	At The Pas	Pas	Arebd'a. J. A. Mackay	Church of England	33	42	75	65	20	17	23	11	3	1
Portage La Prairie	At Portage LaPrairie	Portage La Prairie	Rev. W. A. Hendry	Presbyterian	27	54	81	66	19	16	26	14	6	
Total, Manitoba					272	334	606	546	150	119	161	107	48	21
SASKATCHEWAN.														
Thunderchild	Adjoining Thunderchild.	Battleford	Rev. A. Watelle, O.M.I.	Roman Catholic	23	19	42	30	9	11	13	5	3	1
Beauval (Lac la Plonge)	At Lac la Plonge	Carlton	Rev. J. M. Penard, O.M.I.	"	21	40	61	49	22	11	19	5	4	
Lac la Ronge	At Lac la Ronge	"	Chas. F. Hives	Church of England	23	34	57	51	20	12	7	11	7	
Cowessess	Cowessess	Crooked Lakes	Rev. G. Falard, O.M.I.	Roman Catholic	32	31	63	61	22	8	16	10	3	4
Round Lake	On North side Round Lake.	"	Rev. P. McKay	Presbyterian	27	35	62	43	24	13	12	6	7	
Duck Lake	Near Duck Lake	Duck Lake	Rev. H. Delmas, O.M.I.	Roman Catholic	53	54	107	105	10	35	19	18	16	9
File Hills	Adjoining File Hills.	Qu'Appelle	W. W. Gibson	Presbyterian	29	38	67	58	17		12	13	22	3
Onion Lake (R.C.)	Seekuskootch	Onion Lake	Rev. J. A. Therien	Roman Catholic	28	27	55	43	26	14	9	1	3	2
Onion Lake (C.E.)	Maknoo's	"	Henry Ellis	Church of England	20	18	38	32	19	9	2	4	2	2
Gordon's	Geo. Gordon's	Touchwood Haills	Rev. H. W. Atwater	"	23	32	55	49	16	17	6	8	2	6
Muscowequan's	Adjoining Muscowequan's.	"	Rev. J. Carriere, O.M.I.	Roman Catholic	24	30	54	50	26	7	6	5	6	4
Total, Saskatchewan					303	358	661	580	211	137	121	86	75	31

Alberta.												
Blood (C.E.)	Blood	Blood	Rev. S. Middleton	Church of England	36	33	69	59	12	13	24	19	1	
Blood (R.C.)	"	"	Rev. E. Roux, O.M.I	Roman Catholic	36	23	59	55	23	10	13	7	6	
Crowfoot	Blackfoot	Blackfoot	Rev. L. Doucet, O.M.I	"	25	18	43	43	7	16	7	11	2	
Old Sun's	"	"	H. W. Gibbon-Stocken	Church of England	16	20	36	30	18	12	6			
St. Albert	At St. Albert	Edmonton	Sister M. O. Briault	Roman Catholic	50	32	82	81	10	14	17	12	7	13
Fort Chipewyan (Holy Angels)	At Fort Chipewyan	Treaty No. 8.	Sister N. Z. Dufault	"	14	27	41	34	20	13	6	2		
Ermineskins	Ermineskins	Hobbema	Rev. P. P. Moulin, O.M.I	"	20	30	59	56	21	8	12	13	5	
Peigan (C.E.)	Peigan	Peigan	Rev. W. R. Haynes	Church of England	19	12	31	28	22	4	1		4	
Peigan (R.C.)	"	"	Rev. J. L. Levern, O.M.I	Roman Catholic	19	18	37	30	17	11	7	2		
Blue Quills	Blue Quills	Saddle Lake	Rev. L. Balter	"	20	30	50	37	17	10	13	0	4	
Sarcee	Sarcee	Sarcee	Archdeacon J. W. Tims	Church of England	16	17	33	27	17	9	4		3	
Lesser Slave Lake	Lesser Slave Lake	Lesser Slave Lake	Montague J. C. Levason	"	2	7	9	7	2	1	1	3	1	1
Lesser Slave Lake (St. Bernard's)	"	"	Rev. J. Cahis, O.M.I	Roman Catholic	14	11	25	17	17	3	4	1		
Lesser Slave Lake (St. Bruno's)	"	"	Rev. Y. N. Flock O.M.I	"	30	36	66	49	23	12	26	5		
Sturgeon Lake	At Sturgeon Lake	"	Rev. Francois Le Serree	"	9	18	27	23	11	9	5	2		
Vermilion (St. Henri)	At Fort Vermilion	"	Rev. Jos. Habey, O.M.I	"	8	13	21	19	9	6	3	2	1	
Wabiskaw Lake (C.E.)	At St John's Mission Wabiskaw Lake	"	Rev. A. S. White	Church of England	13	20	33	19	20	8		5		
Wabiskaw Lake (R.C.)	At St. Martin's Mission, Wabiskaw Lake	"	Rev. C. Batie, O.M.I	Roman Catholic	10	17	27	22	11	6	9	1		
Whitefish Lake (St. Andrew's Mission)	At Whitefish Lake	"	Rev. C. D. White	Church of England	3	9	12	8	4	3	4	1		
Total, Alberta					369	391	760	644	289	169	162	92	34	14
Northwest Territories														
Fort Resolution	At Fort Resolution	Fort Smith	Sister McQuillan	Roman Catholic	29	44	73	60	34	10	15	4	9	1
Hay River	At St. Peter's Mission	"	Rev. Geo. W. Bowring	Church of England	31	23	54	44	39	3	10	2		
Providence Mission (Sacred Heart)	At Fort Providence	Fort Simpson	Sister St. Rose of Lima	Roman Catholic	28	42	70	65	38	14	8	10		
Total, Northwest Territories					88	109	197	169	111	27	33	16	9	1
British Columbia.														
Kitamaat	Kitamaat	Bella Coola	Miss M. E. Butcher	Methodist	8	28	36	29	6	11	7	5	7	
Alert Bay Girls' Home	Alert Bay	Kwawkewlth.	A. W. Corker	Church of England		33	33	27	11	8	7	4	3	
Port Simpson Girls' Home	At Port Simpson	Naas	Miss Lottie M. Deacon	Methodist		40	40	36	3	6	5	11	13	2
Sechelt	Sechelt	New Westminster	Sister Theresine	Roman Catholic	23	30	53	52	18	16	10	8	1	
Squamish	At Squamish	"	Sister Mary Amy	"	28	22	50	50	25	6	10	9		
St. Mary's Mission	At St. Mary's Mission	"	Rev. V. Rohr, O.M.I	"	45	44	89	87	31	25	13	18	2	
Stuart Lake	At Fort St. James	Stuart Lake	Rev. J. Allard, O.M.I	"	54	27	81	69	67	11	2	1		
Alberni	Tresaht	West Coast	H. B. Currie	Presbyterian	25	22	47	41	14	7	8	13	5	
Ahousaht	Ahousaht	"	Rev. J. L. Millar	"	12	7	19	9	11	7	1			
Total, British Columbia					195	253	448	400	186	07	63	69	31	2
Yukon.														
Carcross	at Carcross	Yukon	A. Grasett Smith	Church of England	18	15	33	29	7	3	7	6	10	

SCHOOL STATEMENT.—*Continued.*

STATEMENT of Indian Industrial Schools in the Dominion for the Fiscal Year ended March 31, 1919.

School.	Situation.	Principal.	Denomination.	Number on Roll.			Average Attendance.	Standard.						Industries Taught.					
				Boys.	Girls.	Total.		I	II	III	IV	V	VI	Carpenter	Shoemaker	Baker.	Blacksmith.	Painter.	Total.
ONTARIO.																			
Mohawk Institute	At Brantford	Mrs. A. M. Boyce, (Acting)	Undenominational	64	85	149	117	7	23	30	39	24	26						
Mount Elgin Institute	At Muncey	Rev. S. R. McVitty.	Methodist	66	81	147	126	35	24	46	25	17							
Shingwank Home	At Sault Ste. Marie	Rev. Benj. P. Fuller	Church of England	32	27	59	50	17	10	18	7	5	2						
Spanish River	At Spanish	Rev. T. A. Desautels S. J.	Roman Catholic	112	96	208	178	70	26	27	48	32	5	4	4				8
Total, Ontario				274	289	563	471	129	83	121	119	78	33	4	4				8
MANITOBA.																			
Brandon	At Brandon	Rev. T. Ferrier	Methodist	72	55	127	107	32	22	17	25	10	21	21					
SASKATCHEWAN.																			
Qu'Appelle	At Lebret	Rev. A. J. A. Dugas, O.M.I.	Roman Catholic	98	113	211	176	70	35	46	29	14	17						
ALBERTA.																			
Red Deer	At Red Deer	Rev. J. J. Woodsworth	Methodist	37	26	63	59	23	7	22	8	1	2	37					37
St. Joseph	At Davisburg	Rev. J. A. Demers, O.M.I.	Roman Catholic	22	16	38	35		5	12	8	12	1						
Total, Alberta				59	42	101	94	23	12	34	16	13	3	37					37
BRITISH COLUMBIA.																			
Alert Bay	At Alert Bay, Kwawkewlth Agency	A. W. Corker	Church of England	36		36	31	6	10	10	4	2	4	18					18
Clayoquet	On Clayoquot Sound, West Coast of Vancouver Isld. West Coast Agency	Rev. Jos. Schindler, O.S.B.	Roman Catholic	27	20	47	33	17	5	11	4	9	1	2	1	1			4
Coquuleetza	3 miles from Chilliwack, New Westminster Agency	Rev. Geo. H. Raley	Methodist	75	53	128	108	17	30	14	33	17	17						
Kamloops	At Kamloops in The Kamloops Agency	Rev. Jas. McGuire, O.M.I.	Roman Catholic	33	33	66	60	23	13	12	7	9	2	33					33
Kootenay	At St. Eugene, 5 miles from Cranbrook, Kootenay Agency	Sister Justinian	"	35	45	80	80	33	32	11	4			35					35
Kuper Island	On Kuper Island, Cowichan Agency	Rev. Jos. Guerts	"	50	45	95	78	16	20		20	20	19	7	3				10

Lytton.....	2½ miles from Lytton, Lytton Agency.. .	Rev. Louis Laronde	Church of England	51	40	91	78	15	24	25	10	15	2	1	2	.....	10	1	14
Williams Lake	At Williams Lake, 4 miles from Sugar Cane Reserve, Williams Lake Agency.	Rev. Ed. Maillard, O.M.I	Roman Catholic..	41	36	77	71	45	8	9	5	7	3	2	1	. ....	.....	...	3
Total, British Columbia	. ...	.....	. ....	348	272	620	539	172	142	92	87	79	48	98	7	1	10	1	117.

Note.—All boys at Industrial Schools are taught farming; and all girls, sewing, knitting and general household duties.

SCHOOL STATEMENT.—*Continued.*

STATEMENT showing the enrolment by Provinces in the different classes of schools during the Fiscal Year ended March 31, 1919.

DAY SCHOOLS.

Province.	Number of Schools.	Denomination.						Number on Roll.			Average Attendance.	Percentage of Attendance.	Standard.					
		Undenominational.	Roman Catholic.	Church of England.	Methodist.	Presbyterian.	Salvation Army.	Boys.	Girls.	Total.			I	II	III	IV	V	VI
Nova Scotia	14	.....	14	.....	.....	.....	.....	115	140	255	126	49·45	123	64	26	23	14	5
Prince Edward Island	2	.....	2	.....	.....	.....	.....	21	22	43	15	34·88	12	13	14	4	.....	.....
New Brunswick	12	.....	12	.....	.....	.....	.....	143	133	276	148	53·62	89	56	73	38	17	3
Quebec	28	7	15	4	2	.....	.....	611	643	1,254	722	57·57	573	275	204	134	44	24
Ontario	81	36	24	13	8	.....	.....	1,340	1,282	2,622	1,265	48·24	1,328	469	457	253	111	4
Manitoba	39	4	4	17	13	1	.....	558	490	1,048	493	47·04	686	189	116	48	8	1
Saskatchewan	21	1	4	13	1	2	.....	262	218	480	229	47·66	292	91	65	21	7	4
Alberta	4	.....	.....	.....	4	.....	.....	52	52	104	43	41·33	83	13	7	1	.....	.....
Northwest Territories	3	.....	2	1	.....	.....	.....	16	20	36	17	47·22	19	10	3	4	.....	.....
British Columbia	39	5	6	12	14	1	1	550	529	1,079	500	46·34	611	211	164	74	17	2
Yukon	5	.....	.....	5	.....	.....	.....	61	54	115	29	25·22	89	22	4	.....	.....	.....
Total, Day Schools	248	53	83	65	42	4	1	3,729	3,583	7,312	3,587	49·06	3,905	1,413	1,133	600	218	43

BOARDING SCHOOLS.

Nova Scotia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prince Edward Island	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Brunswick	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quebec	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ontario	7	.....	4	2	.....	1	.....	141	172	313	259	82·75	131	70	58	29	20	5
Manitoba	8	.....	4	1	1	2	.....	272	334	606	546	90·10	150	119	161	107	48	21
Saskatchewan	11	.....	6	3	.....	2	.....	303	358	661	580	87·75	211	137	121	86	75	31
Alberta	19	.....	12	7	.....	.....	.....	369	391	760	644	84·73	289	169	162	92	34	14
Northwest Territories	3	.....	2	1	.....	.....	.....	88	109	197	169	85·33	111	27	33	16	9	1
British Columbia	9	.....	4	1	2	2	.....	195	253	448	400	89,28	186	97	03	69	31	2
Yukon	1	.....	.....	1	.....	.....	.....	18	15	33	29	87·87	7	3	7	6	10	.....
Total, Boarding Schools	58	.....	32	16	3	7	.....	1,386	1,632	3,018	2,627	87·04	1,085	622	605	405	227	74

INDUSTRIAL SCHOOLS.

Nova Scotia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prince Edward Island	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Brunswick	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

| | | |

SUMMARY OF SCHOOL STATEMENT.

Province.	Class of School.			Total Number of Schools.	Denomination.					
	Day.	Boarding.	Industrial.		Undenominational.	Roman Catholic.	Church of England.	Methodist.	Presbyterian.	Salvation Army.
Nova Scotia	14			14		14				
Prince Edward Island	2			2		2				
New Brunswick	12			12		12				
Quebec	28			28	7	15	4	2		
Ontario	81	7	4	92	37	29	16	9	1	
Manitoba	39	8	1	48	4	8	18	15	3	
Saskatchewan	21	11	1	33	1	11	16	1	4	
Alberta	4	19	2	25		13	7	5		
Northwest Territories	3	3		6		4	2			
British Columbia	39	9	8	56	5	15	15	17	3	1
Yukon	5	1		6			6			
Total	248	58	16	322	54	123	84	49	11	1

NOTE.—All boys at industrial schools are taught farming; and all girls, sewing, knitting and general household duties.

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SUMMARY OF SCHOOL STATEMENT.

Number on Roll.			Average Attendance.	Percentage of Attendance.	Standard.						Industries Taught.					
Boys.	Girls.	Total.			I	II	III	IV	V	VI	Carpenter.	Shoemaker.	Baker.	Blacksmith.	Painter.	Total.
115	140	255	126	49·45	123	64	26	23	14	5	....	....	....	....	....	....
21	22	43	15	34·88	12	13	14	4	.....	.....	....	....	....	....	....	....
143	133	276	148	53·62	89	56	73	38	17	3	....	....	....	....	....	....
611	643	1,254	722	57·57	573	275	204	134	44	24	....	....	....	....	....	....
1,755	1,743	3,498	1,995	57·03	1,588	622	636	401	209	42	4	4	....	....	....	8
902	879	1,781	1,146	64·35	868	330	294	180	66	43	....	....	....	....	....	....
663	689	1,352	916	67·76	573	263	232	136	96	52	....	....	....	....	....	....
480	485	965	781	80·93	395	194	203	109	47	17	37	....	....	....	....	37
104	129	233	186	79·83	130	37	36	20	9	1	....	....	....	....	....	....
1,093	1,054	2,147	1,439	67·02	969	450	319	230	127	52	98	7	1	10	1	117
79	69	148	58	39·19	96	25	11	6	10	.....	....	....	....	....	....	....
5,966	5,986	11,952	7,532	63·02	5,416	2,329	2,048	1,281	639	239	139	11	1	10	1	162

INDIAN LAND STATEMENT.

Showing the Number of Acres of Indian Lands Sold during the year ended the 31st March, 1919, the total amount of purchase money realized and the quantity of land unsold at that date.

ONTARIO.

Town or Township.	County or District.	Number of acres sold.	Amount of sale.	Number of acres unsold.	Remarks.
		Acres.	$ cts.	Acres.	
Albemarle	Bruce	100·00	25 00	100·00	Some of these lands were resumed by the Department, the conditions of sale not having been complied with, so that in certain cases there appears to have been more land remaining unsold at the close of the past fiscal year than remained unsold according to the previous year's report.
Eastnor	"			358·00	
Lindsay	"			589 00	
St. Edmund	"	167·60	40 00	206 00	
Bury (Townplot)	"	67·60	15 00	165·59	
Oliphant (Townplot)	"			40·00	
Southampton (Townplot)	"	0·63	10 00	21·00	
Wiarton (Townplot)	"			11·55	
Islands off Saugeen Peninsula	"			163·55	
White Cloud Island	Grey			7·00	
Thessalon	Algoma	147·50	341 30	561 69	
Thessalon (Townplot)	Algoma	1·11	60 00	11·80	
Archibald	"			2,943·00	
Dennis	"			364·00	
Herrick	"			190·00	
Havilland	"			718·00	
Kars	"			6,686·00	
Apaquosh (Townplot)	"			120·00	
Laird	"			3,826·00	
Vankoughnet	"			4,468·00	
Kehoe	"			14,337·00	
Fenwick	"	80·00	20 00	5,313·00	
Cobden	"			370·21	
Mississaga Reserve	"	3·22	10 00		
Pennefather	"			483·00	
Macdonald	"	55·00	27 50		
Ley	"			929·00	
Fisher	"			80·00	
Fisher (Townplot)	"			199·30	
Tilley	"			876·00	
Tupper	"			3,024·50	
Assiginack	Manitoulin	471·00	124 50	98·00	
Bidwell	"	250·00	70 00	253·00	
Campbell	"	300·00	275 00	776·00	
Carnarvon	"	2,617·00	821 75	2,368·00	
Howland	"			550·00	
Sheguiandah	"	197·00	46 22	547·00	
Sheguiandah (Townplot)	"	5·72	40 00	23·28	
Manitowaning (Townplot)	"	0·60	130 00	17·37	
Tehkummah	"	2,288·00	624 50	5,752·00	
Sandfield	"	1,308·00	314 04	1,820·00	
Shaftsbury (Townplot)	"			8·50	
Tolsmaville (Townpolt)	"			1,002·00	
Allan	"	300·00	110 00	382·00	
Billings	"			112·00	
Burpee	"	200 00	150 00	2,665·00	
Barrie Island	"	47·00	9 40	55·00	
Gordon	"			353·00	
Gore Bay (Townplot)	"	12·74	201 00	7·04	
Mills	"	806·00	141 60	1,056·00	
Cockburn Island	"			18,498·00	
Dawson	"	620·00	534 25	6,139·00	
Robinson	"	100·00	50 00	9,201·00	
South Baymouth (Townplot)	"			133·00	
Meldrum (Townplot)	"			78·00	
Cayuga	Haldimand			100·00	
Cayuga (Townplot)	"			33·36	
Dunn	"			1,548·00	
Caledonia (Townplot)	"			51·00	
Shannonville (Townplot)	Hastings			1·45	
Desceronto (Townplot)	"			4·40	
Tyendinaga	"			380·00	
Bedford	Frontenac			208·00	

SESSIONAL PAPER No. 27

INDIAN LAND STATEMENT.—*Continued.*

SHOWING the Number of Acres of Indian Lands Sold during the year ended the 31st March, 1919, the total amount of purchase money realized and the quantity of land unsold at that date.

ONTARIO.—*Continued.*

Town or Township.	County or District.	Number of acres sold.	Amount of sale.	Number of acres unsold.	Remarks.
		Acres.	$ cts.	Acres.	
Islands, River St. Lawrence	Prov. Ontario	0·10	50 00	19·18	
Islands, Georgian Bay	"	15·64	210 00		1219 Islands and Islets.
Wild Land Reserve	Rainy River	1,008·39	3,117 03	9,090·09	
Long Sault Reserve	"	1,324·71	7,491 68	846·24	
Little Forks Reserve	"			1,951·56	
Beaucage	Nipissing	331·00	1,158 50	17,295·50	
Commanda	"			25,272·57	
Pedley	"	2,052·00	13,324 00	6,740·01	
Thurlow	Hastings			130·00	
Caradoc Reserve	Middlesex	37·00	1 00		Enfranchisement.
Enniskillen	Lambton	100·00	1,500 00		
Islands in Otonabee waters	Peterborough	0·60	50 00		
Bronte (Townplot)	Halton	0·50	50 00		
Brantford	Brant	3·21	161 00		
		15,018·87	31,304 27	162,727·74	

SASKATCHEWAN.

Long Lake Reserve 80 A	Assiniboia			1,408·00	
Piapot Reserve	"			2,180·00	
Assiniboine Reserve	"			320·50	
Muscowpetung Reserve	"			1,551·60	
Kylemore (Townplot)	Humboldt	0·37	170 00	21·02	
Lestock (Townplot)	"	0·37	270 00	14·00	
Fishing Lake Reserve	"			630·30	
Crooked Lakes Reserve	Moosomin			5,103·56	
Mistawasis Reserve	Prince Albert			5,028·00	
Big River Reserve	"			980·00	
Swan River Reserve 7A	Saskatoon			320·00	
Moosomin and Thunderchild Reserve	West Sask	17·79	177·90	3,462·21	
Saulteaux Reserve No. 159	"	4·62	46·20		Rd. allowance.
Little Bone Reserve	Yorkton	503·60	5,045 00	3,799·10	
Coté Reserve	"	320·41	18,773·53	490·00	
Keeseekoose Reserve	"			571·00	
Key Reserve	"			1,857·50	
Kamsack (Townplot)	"	0·30	350 00	3·58	
Grizzly Bear Reserve 110 & 111	West Sask			655·70	
		847·46	24,832 63	28,396·07	

BRITISH COLUMBIA.

Whonock Reserve No. 1	New Westminster	1·00	300 00		
Fountain Reserve No. 3	Lillooet	13·07	724 20		
Tibbets Reserve No. 2	Const	9·15	607 50		
Charles Reserve No. 1	"	38·66	1,933 00		
Pentledge Reserve No. 2	Comox	1 96	600 00		
		63·84	4,164 70		

INDIAN LAND STATEMENT.—*Concluded.*

SHOWING the Number of Acres of Indian Land Sold during the year ended the 31st March, 1919, the total amount of purchase money realized and the quantity of land unsold at that date.

ALBERTA.

Town or Township.	County or District.	Number of acres sold.	Amount of sale.	Number of acres unsold.	Remarks.
		Acres.	$ cts.	Acres.	
Wabamun (Townplot)	North Alberta	0·19	40 00	456·13	
Wabamun Reserve	"			1,775·00	
Sharphead Reserve	"	342·90	3,600 45	342·30	
Swan River Reserve 150E	"	42·42	1,060 50		Ry. Rt. of Way.
Samson Reserve	"			3,060·00	
Bobtail Reserve	"			6,673·00	
Louis Bull Reserve	"			1,606·00	
Duffield (Townplot)	"	0·10	75 00	234·85	
Blackfoot Reserve	"	6·39	255 60	9,616·61	
Michel Reserve	"			182·00	
Sarcee Reserve	"			6,650·00	
Peigan Reserve	"			10,082·00	
		392·00	5,031 55	40,677·89	

MANITOBA.

Gamblers Reserve	Marquette			160·00	
The Pas (Townplot)	Neepawa	1·60	1 00	745·00	
Long Plain Reserve	Macdonald	1,526·14	30,713 92	2,192·54	
Elkhorn	Brandon			0·11	
Roseau River Reserve	Provencher			160·00	
		1,527·74	30,714 92	3,257·65	

QUEBEC.

Ouiatchouan	Lake St. John			3,917·14	
Dundee	Huntingdon			4,057·74	
Maniwaki (Townplot)	Ottawa	0·50	270 00	45·68	
Timiskaming Reserve	Timiskaming	212·04	158 50	1,386·63	
Quarante Arpents Reserve	Laprairie			19·00	
		212·54	428 50	9,426·19	

NEW BRUNSWICK.

Tobique Reserve	Victoria			399·00	
Richibucto or Big Cove	Kent	50 00	100 00		
		50·00	100 00	399·00	

NOVA SCOTIA.

Fairy Lake Reserve	Annapolis and Queens	898·00	8,080 00	357·50	

GENERAL REMARKS.

The land sold during the year amounted to 19,010.45 acres, which realized $104,656.57. The quantity of surrendered land in the hands of the department was approximately 245,242 acres. The principal outstanding, on account of Indian lands sold amounted to $2,870,102.03, a considerable portion of which has not yet become due.

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CIVIL GOVERNMENT.

1918-1919.

Vote.	Grant.	Expenditure.	Grant not used.	Grant exceeded.
	$ cts.	$ cts.	$ cts.	$ cts.
Salaries	133,075 00	119,814 50	13,260 50	
Temporary clerks and messengers	2,000 00	1,699 94	300 06	
Printing and stationery	6,000 00	6,145 98		145 98
Travelling expenses, etc	8,000 00	3,465 44	4,534 56	
Contingencies	3,000 00	2,664 93	335 07	
Unexpended balance				18,284 21
	152,075 00	133,790 79	18,430 19	18,430 19

APPROPRIATION ACCOUNTS.

1918-1919.

Vote.	Grant.	Expenditure	Grant not used.	Grant exceeded.
	$ cts.	$ cts.	$ cts.	$ cts.
Nova Scotia.				
Salaries	4,400 00	4,404 66		4 66
Relief	8,000 00	10,212 47		2,212 47
Medical attendance and medicines	5,000 00	6,211 31		1,211 31
Miscellaneous and unforeseen	5,300 00	1,780 66	3,519 34	
Seed grain—to provide for encouragement of agriculture among Indians	1,000 00	1,410 25		410 25
Repairs to roads and dyking	600 00	279 10	320 90	
Unexpended balance				1 55
	24,300 00	24,298 45	3,840 24	3,840 24
New Brunswick.				
Salaries	1,984 00	1,546 22	437 78	
Relief	10,000 00	11,350 05		1,350 05
Medical attendance and medicines	4,000 00	3,330 30	669 70	
Miscellaneous and unforeseen	850 00	964 81		114 81
Repairs to roads	450 00	74 50	375 50	
Seed grain—to provide an amount to encourage agriculture	1,000 00	1,016 95		16 95
Unexpended balance				1 17
	18,284 00	18,282 83	1,482 98	1,482 98
British Columbia.				
Salaries	47,840 00	42,444 58	5,395 42	
Relief	22,000 00	32,541 50		10,541 50
Seed, implements and farming	8,450 00	13,198 87		4,748 87
Medical attendance, medicines and hospitals	53,200 00	52,525 20	674 80	
Travelling expenses	20,000 00	24,416 11		4,416 11
Office, miscellaneous and unforeseen	19,560 00	8,414 46	11,145 54	
Surveys	5,000 00	1,698 30	3,301 70	
Unexpended balance				810 98
	176,050 00	175,239 02	20,517 46	20,517 46
Prince Edward Island.				
Salaries	600 00	600 00		
Relief and seed grain	1,375 00	1,640 29		265 29
Medical attendance and medicines	850 00	802 69	47 31	
Miscellaneous	400 00	174 41	225 59	
Unexpended balance				7 61
	3,225 00	3,217 39	272 90	272 90
Manitoba, Saskatchewan, Alberta, Etc.				
Implements, tools, etc	7,366 00	3,056 86	4,309 14	
Garden and field seeds	2,957 00	14,661 38		11,704 38
Live Stock	4,835 00	2,153 80	2,681 20	
Supplies for destitute Indians	143,167 00	156,098 43		12,931 43
Medical attendance, medicines, hospitals, etc	103,767 00	93,851 35	9,915 65	
Triennial clothing	6,000 00	5,209 70	790 30	
Surveys	11,000 00	8,069 34	2,930 66	
Sioux	6,418 00	9,086 58		2,668 58
Mills	6,076 00	7,938 02		1,862 02
General expenses	244,563 00	235,773 80	8,789 20	
Unexpended balance				249 74
	536,149 00	535,899 26	29,416 15	29,416 15

APPROPRIATION ACCOUNTS.—*Concluded.*

1918–1919.

Vote.	Grant.	Expenditure	Grant not used.	Grant exceeded.
	$ cts.	$ cts.	$ cts.	$ cts.
ONTARIO-QUEBEC.				
Quebec, relief, medical attendance and medicines.	17,000 00	17,073 56		73 56
Ontario, relief medical attendance and medicines	11,000 00	12,339 16		1,339 16
Repairs to roads and drainage	1,900 00	445 30	1,454 70	
General expenses	51,875 00	51,795 66	79 34	
Unexpended balance				121 32
	81,775 00	81,653 68	1,534 04	1,534 04
YUKON.				
Relief, medical attendance and medicines.	11,000 00	11,017 10		17 10
Surveys	2,000 00	340 35	1,659 65	
General expenses	4,000 00	3,346 45	653 55	
Unexpended balance				2,296 10
	17,000 00	14,703 90	2,313 20	2,313 20
GENERAL.				
Payments to Indians surrendering their lands	25,000 00	15,300 00	9,700 00	
Relief to destitute in remote districts	60,000 00	65,286 67		5,286 67
To prevent spread of tuberculosis	10,000 00	13,498 00		3,498 00
Printing and stationery	5,000 00	4,672 14	327 86	
Grant to assist Trust Fund Account 310, for suppression of liquor traffic	3,000 00	3,000 00		
Surveys, Ontario, Quebec and Maritime Provinces	3,000 00	1,467 45	1,532 55	
To provide for expenses in connection with epidemic of smallpox and other diseases	85,000 00	92,605 65		7,605 65
Fees for registration of births, marriages and deaths	1,500 00	204 00	1,296 00	
Legal expenses	5,500 00	1,965 47	3,534 53	
Unexpended balance				0 62
	198,000 00	197,999 38	16,390 94	16,390 94
Indian education	735,515 00	735,504 90	10 10	
ANNUITIES				
Treaty 9	205,290 00	696 00	20,819 00	
Manitoba and North West Territories		183,775 00		
Unexpended balance				20,819 00
	205,290 00	184,471 00	20,819 00	20,819 00
WAR APPROPRIATION.				
Greater production	300,000 00	251,700 43	48,299 57	
Unexpended balance				48,299 57
	300,000 00	251,700 43	48,299 57	48,299 57

RECAPITULATION.

Appropriation Accounts.

1918-1919.

Vote.	Grant.	Expenditure.	Grant not used.
	$ cts.	$ cts.	$ cts.
Civil Government	152,075 00	133,790 79	18,430 19
Annuities	205,290 00	184,471 00	20,819 00
Prince Edward Island	3,225 00	3,217 39	7 61
Nova Scotia	24,300 00	24,298 45	1 55
New Brunswick	18,284 00	18,282 83	1 17
Ontario and Quebec	81,775 00	81,653 68	121 32
Manitoba and North West Territories	536,149 00	535,899 26	249 74
British Columbia	176,050 00	175,239 02	810 98
Yukon	17,000 00	14,703 90	2,296 10
General	198,000 00	197,999 38	0 62
Indian education	735,515 00	735,504 90	10 10
War Appropriation (Greater Production)	300,000 00	251,700 43	48,299 57
Total	2,295,588 00	2,222,970 24	72,617 76

INDIAN TRUST FUND.

Showing transactions in connection with the Fund during the year ended March 31, 1919.

Service.	Debit.	Credit.
	$ cts	$ cts
Balance, March 31, 1918		8,665,137 35
Collection on land sales, timber and stone dues, rents, fines and fees		1,122,254 09
Interest for year ending March 31, 1918		111,155 30
Legislative grants to supplement the funds		3,000 00
Outstanding cheques, 1916-17		168 60
Credit transfers during the year		85 55
Debit transfers during the year	7,473 65	
Expenditure during the year	988,540 57	
Balance, March 31, 1919	9,238,786 67	
	10,234,800 89	10,234,800 89

REPORT

OF THE

ROYAL NORTHWEST MOUNTED POLICE

FOR THE

YEAR ENDED SEPTEMBER 30, 1919

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

[No. 28—1920.]

To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc., Governor General and Commander-in-Chief of the Dominion of Canada.

MAY IT PLEASE YOUR EXCELLENCY:

The undersigned has the honour to present to Your Excellency the Annual Report of the Royal Northwest Mounted Police for the year ended September 30, 1919.

Respectfully submitted,

N. W. ROWELL,

President of the Council.

January 20, 1920.

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REPORT OF THE ROYAL NORTHWEST MOUNTED POLICE.

COMMISSIONER'S OFFICE,
REGINA, SASK., November 20, 1919.

The Honourable N. W. ROWELL,
President of the Privy Council,
Ottawa, Ont.

SIR,—I have the honour to submit for your information, my annual report for the year ended September 30, 1919.

At the time of my last report you had under consideration the question of the future of the Royal Northwest Mounted Police. During the course of the war many changes have taken place. The duties hitherto performed by the force for the provinces of Alberta and Saskatchewan had ceased. Contingents of the force were serving overseas and in consequence, the strength was the lowest in its history.

In December last, the Government decided that the force should be continued permanently; that its jurisdiction should be extended to all western Canada, and that its authorized strength should be fixed at 1,200 men and that it should be the sole Federal Police Force in that area. Subsequently in July of this year, the authorized strength was increased to 2,500.

By Order in Council its duties were defined as follows:—

(*a*) The enforcement of Federal laws.
(*b*) The patrolling and protection of the international boundary line.
(*c*) The enforcement of all Orders in Council passed under the "War Measures" Act, for protection of public safety.
(*d*) Generally to aid and assist the civil powers in the preservation of law and order whenever the Government of Canada may direct.

The extension of its jurisdiction and duties necessitated a partial reorganization of the force and a redistribution of its strength.

The boundaries of old districts were abrogated and the following new districts organized:—

Name of District—	Headquarters of District—	Strength.
Manitoba	Winnipeg	250
Southern Saskatchewan	Regina	75
Northern Saskatchewan	Prince Albert	85
Southern Alberta	Lethbridge	195
Northern Alberta	Edmonton	130
British Columbia	Vancouver	210
Yukon	Dawson	55
General Headquarters and Depot	Regina	200
Total		1,200

The following departures were made from provincial boundaries as a result of the rearrangement of districts for convenience of administration:—

1. The district of Manitoba includes the portion of Ontario embraced in Military District No. 10.

2. The district of Northern Saskatchewan includes a portion of Northern Manitoba and the Eastern portion of Northwest Territories.

3. The District of Southern Alberta includes East Kootenay, the southeast corner of British Columbia, and that portion of the same province along the main line of the Canadian Pacific Railway as far as the Upper Columbia river.

4. The District of Northern Alberta includes that portion of British Columbia lying east of the Rocky Mountains and also the western portion of the Northwest Territories.

5. The Yukon District includes that portion of Northern British Columbia adjacent to the Yukon Territory.

There are marked changes in the districts in Alberta and Saskatchewan as formerly constituted.

In Saskatchewan, Prince Albert and Battleford are joined to form the Northern Saskatchewan district; Maple Creek and Regina districts form the Southern Saskatchewan district.

In Alberta, Lethbridge, Calgary and Macleod form the Southern Alberta district, and Edmonton and Peace River, the Northern Alberta district.

The posts at Battleford, Maple Creek, and Peace River are occupied as outposts only, with limited strength.

The Government considered it desirable that the force should be raised to its authorized strength and placed in an efficient condition as soon as possible. It was therefore decided that the contingents overseas should return to Canada. The first draft arrived on the 14th March and was followed by successive drafts until the final draft from Siberia which returned on July 7.

The new districts were organized as rapidly as possible and the required men and horses transferred to their stations as soon as they were available.

Active recruiting was carried on during the months from May to September, in Eastern Canada, so that the force was raised from its total strength of 303 in September, 1918, to its present strength of 1,600.

STRENGTH AND DISTRIBUTION OF THE FORCE.

On September 30, 1919, the strength of the force was 60 officers, 1,540 non-commissioned officers and constables, and 833 horses; of this total, however, 1 officer has not as yet reported for duty.

Compared with last year's statement of September 30, this is an increase of 25 officers and 1,272 non-commissioned officers and constables, and 236 horses over the number actually available for duty then, after the transfer to the C.E.F. of "A" Squadron, R.N.W.M. Police Overseas Cavalry on May 15, 1918, and of "B" Squadron, R.N.W.M. Police Cavalry (Siberia) on October 1, 1918; or a net increase (after taking into consideration those so on leave with these two squadrons) of 8 officers and 371 non-commissioned officers and constables and 236 horses.

The following shows the distribution in the different provinces and territories:—

	Commissioner.	Asst. Commissioners.	Superintendents.	Inspectors.	Surgeons.	Vet. Surgeon.	Staff Sergeants.	Sergeants.	Corporals.	Constables.	Supernumerary Constables.	Total.	Horses. Saddle.	Team.	Ponies.	Total.	Dogs.
Alberta	....	....	3	7	1	....	12	23	36	146	19	247	207	35	....	242	....
Saskatchewan	1	2	4	20	1	1	24	53	82	749	31	968x	315	39	....	354	....
Manitoba	..	..	1	3	..	..	4	6	14	52	1	81	25	2	....	27	28
British Columbia	....	..	1	8	..	....	4	16	24	153	5	211	167	6	..	173	..
N. W. Territories	....	....	..	2	..	....	1	1	3	7	3	17	1	....	1	2	41
Yukon Territory	....	..	1	2	....	....	5	3	6	28	4	49	6	9	....	15	24
Yntario	....	..	..	1	..	....	..	2	4	18	1	26	18	2	....	20	....
Inspector R. L. Cadiz (In England—not yet reported for duty)	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	..
Total	1	2	10	44	2	1	50	104	169	1153	64	1600	739	93	1	833	93

The strength of the different provinces has been increased as follows:—

Alberta	138
Saskatchewan	653
Yukon Territory	8
Manitoba	106

Whereas no change has been made in the strength of the Northwest Territories, new districts have been opened in British Columbia with a strength of 211, and in western Ontario with a strength of 26.

On September 30 the distribution was as follows:—

	Divisional Posts.	Detachments.
Alberta	2	22
Saskatchewan	3	23
Northwest Territories	....	5
Yukon Territory	1	15
British Columbia	1	16
Manitoba	1	13
Western Ontario	....	2
Total	8	96

The following is a statement of the detachments at present maintained:—

Southern Saskatchewan District.

Assiniboia,	Broadview,	Balcarres,
Elmore,	Fort Qu'Appelle,	Goschen,
Kamsack,	Maple Creek,	Marienthal,
Melville,	Meyronne,	Moosejaw,
North Portal,	Northgate,	Punnichy,
Short Creek,	Swift Current,	Shaunavon.
Weyburn,	Yorkton,	

Northern Saskatchewan District.

Battleford,	Fullerton,	Humboldt,
Port Nelson, Man.,	Saskatoon,	The Pas, Man.

*NOTE.—On September 23, 1 officer and 146 other ranks proceeded to Brandon on transfer from October 1, 1919.

On October 21, 136 other ranks proceeded to Vancouver on transfer from November 1, 1919.

On October 24, 122 other ranks proceeded to Macleod on transfer from November 1, 1919.

STATEMENT OF DETACHMENTS AT PRESENT MAINTAINED.—*Continued.*

Southern Alberta District.

Banff,	Blairmore,	Brocket,
Bankhead,	Calgary,	Canmore,
Corbin, B.C.,	Drumheller,	Fernie, B.C.
Field, B.C.,	Lake Louise,	Macleod,
Medicine Hat,	Michel, B.C.,	Pincher Creek,
Stand Off,	Taber,	Waterton Park.

Northern Alberta District.

Athabasca,	Herschel Island, Y.T.,	Fort Simpson,
Brule,	Nordegg,	Grouard,
Fort Resolution, N.W.T.,	Pocahontas,	Jasper,
Fort Fitzgerald,	Coppermine River, N.W.T.,	Peace River,
Grande Prairie,	Fort Macpherson, N.W.T.,	

Manitoba District.

Brandon,	Boissevain,	Crystal City,
Dauphin,	Emerson,	Fort Frances, Ont.,
Fort William, Ont.,	Gretna,	Hodgson,
Lac du Bonnet,	Norway House,	Sprague.

British Columbia District.

Cumberland,	Esquimalt,	Grand Forks,
Hazleton,	Kamloops,	Midway,
Nanaimo,	Nelson,	Port Alberni,
Prince George,	Prince Rupert,	Victoria.

Yukon District.

Atlin, B.C.,	Champagne,	Carcross,
Carmacks,	Dawson Town Station,	Fort Mille,
Granville,	Halfway,	Mayo,
Moosehide,	Rampart House,	Teslin.
Whitehorse,	White Pass Summit,	

The force is now distributed over the whole of its jurisdiction so that its many and varied duties may be most effectively performed.

Provision has been made for an adequate reserve in each district which may be moved promptly to any point to meet an emergency; to patrol the international boundary for the purpose of assisting the Customs and Immigration officials; to maintain law and order amongst the Indians on their reserves, and especially to prevent the use of intoxicants; to supervise the mining and industrial areas; to watch the settlements of enemy nationality and foreigners whose sentiments might be disloyal and attitude antagonistic; and to enforce law and order in the Northwest Territories and Yukon Territory and in the National Parks where the force is the sole police authority.

As soon as possible after the decision of the Government, our new duties were taken up. The Dominion police was relieved by us of their duties of registering and controlling the movement of enemy aliens; the enforcement of the Military Service Act; the maintenance of a secret service, and the protection of the navy yard at Esquimalt.

With the return of our experienced officers and men from overseas and the re-engagement of many who had left, during the course of the long war, to serve the Empire, the efficiency and strength rapidly increased and the force has been able to meet the demands made upon it.

With regard to the enforcement of law and order within provincial boundaries, the force exercises no jurisdiction and has no direct responsibility. The provincial authorities are solely responsible and the force only intervenes if assistance is requested by them. Thus the force becomes a police reserve which any province may, with the

consent of the Federal Government, utilize to its full strength and power in the support of constituted authority.

The general situation in western Canada during the past year has caused anxiety. The war left the world normally, physically and materially exhausted, and unrest everywhere. Canada has not escaped.

Sections of our population have been affected and as a result, some of the strikes have had a sinister purpose although probably not realized by many who took part.

The most serious was the Winnipeg strike which occurred last May and which led to sympathetic strikes in Brandon, Saskatoon, Edmonton, Calgary, and Vancouver.

Superintendent Starnes, commanding the district of Manitoba, reports as follows on the strike:—

"On the 1st of May, the metal workers declared a strike, and from that time the Trades and Labour Council, led by radicals, devoted all their efforts to the bringing about of a general strike in sympathy with them. This they succeeded in doing, and a general strike was called for 11 o'clock on the 15th May. The events which followed are a matter of public knowledge.

"The post office staff and all mail clerks joined the sympathetic strike with other trades on the 15th of May and a volunteer force was at once organized to carry on the work in the post office. We supplied guards at the post office during the whole time the strike lasted, also escorts for mail carriers, and guards for the mails at the different railway stations until the postmaster decided to start the regular delivery. These guards and escorts had the desired effect and the work was carried on without any interruption. During this time, our plain-clothes men and special agents were constantly keeping in touch with all agitation, and reports on the situation were submitted to you regularly. During the first couple of weeks of the strike, the city police, under an understanding with the Trades and Labour Council, had remained on duty, but it was plainly seen that their sympathy was with the disturbing element, and on the 9th June they were dismissed by the police commission and replaced by a volunteer force. Although we were not called upon to take any active steps until the 21st June, the force under my command was kept in constant readiness, almost day and night. The duties were very heavy. The men were immediately put in readiness whenever any disturbances threatened and the men and horses would 'stand to' for hours, sometimes throughout the night.

"On the 21st June the mayor, being unable to cope with the situation, called for our assistance. You were present at the time together with the attorney general of Manitoba, when the order was given for the men to go to the assistance of the civic authorities to prevent a parade which was intended to be held against the prohibition by proclamation by the mayor. Fifty-four mounted men, under Inspectors Proby and Mead, with thirty-six men in trucks under Sergeant-Major Griffin were sent out. A reserve was kept in barracks under Sergeant-Major Greenway."

"On arrival on the main street near the city hall, our men were received with showers of stones, shots and other missiles. A couple of men were dismounted through their horses falling, and were in danger. The mob got so aggresssive that the officer commanding the mounted men had to give the order to draw their revolvers and use them. This had the desired effect and the streets were soon cleared and the mob kept in check.

"There were 16 of our men wounded with missiles, 4 of whom had to remain in hospital for several days. During the riot, 1 foreigner was killed, 1 fatally wounded and an unknown number wounded. From the time the strike lost its strength; strikers gradually returned to their work, and on the 24th of June it was officially declared 'called off.'

"A sympathetic strike was declared at Brandon on May 20, and assistance was asked by the mayor of that city. Inspector French with 7 men was sent by you to Brandon. Fortunately no serious trouble occurred but these 7 men proved of great assistance in preventing any disturbances.

"Inspector Jennings with his squadron quartered at Osborne barracks proceeded on their way to Regina on July 3 together with Sergeant-Major Griffin's party.

"On June 16, warrants were issued for the arrest of a number of agitators on a charge of seditious conspiracy; at the same time, search warrants were also issued to search the premises of these agitators with a view to securing evidence for their prosecution. These arrests and searches were carried out on the night of June 17 and nine men were arrested and by arrangements by the representative of the Minister of Justice, taken to Stony Mountain to be held in custody. A number of documents, pamphlets and literature were seized and taken charge of by us. These have since been taken to the court house and handed over to the representative of the Minister of Justice, but we have furnished a constant guard over them since that time.

"On June 30, a second search was made and a number of places in Winnipeg, Brandon and Fort William in this district, and also in Vancouver, Calgary, Edmonton, Lethbridge, Regina, Toronto, Montreal and Ottawa, visited. A great deal of material was obtained in these searches and was also turned over to the representative of the Minister of Justice.

"Of the men arrested in connection with the strike, a preliminary hearing on a charge of seditious conspiracy was held on eight. These men were committed for trial, held in custody for a time and have since been released on bail. Four of alien nationality appeared before an immigration board with a view to deportation. Two were ordered deported, one released by the board and another had been ordered by the board released on appeal to the minister. The date of the trial for the eight committed has not yet been fixed."

The sympathetic strikes in other cities were called off as soon as the Winnipeg strike settled.

A strike of this nature is fraught with great danger for, if pushed to the extreme, it would endanger the very existence of the State.

A protracted strike occurred in Mining District 18, which comprises the province of Alberta and East Kootenay in British Columbia. It was without incident but was serious to the extent that the reserve supply of coal was exhausted so that the provinces of Saskatchewan and Alberta are now dependent on the daily output of the mines.

Any interruption of this supply, whether by strike or through interruption of transportation, would entail great hardships and possible loss of life in the West which, owing to its severe winter climate, cannot exist without a regular supply of coal.

There have been many other labour troubles of only local interest.

ENFORCEMENT OF FEDERAL LAWS.

Immigration Act.—Every assistance has been given at ports of entry to the officials of the Immigration Department who control the passenger traffic to and from the United States, and our patrols along the boundary have watched the boundary to prevent the entry of undesirable persons.

There is found among the propagandists of unrest and disorder a number of aliens, many of whom are naturalized Canadians. A recent amendment to the immigration

laws gives power to deal with this undesirable class. Twenty-eight men have been brought before the inquiry boards and eighteen ordered deported. In my opinion this has had a salutary effect in restraining many foreigners from actively associating themselves with the extremists who naturally resent any law which curtails or adversely affects their efforts.

Customs Department.—Our boundary detachments and patrols have aided the Customs officials and prevented smuggling.

Fisheries Act.—We have given the fishery inspectors support in protection of the inland waters and especial attention will be given in future to the prevention of illegal fishing in our mountain streams and rivers, from many of which the trout have almost disappeared.

Inland Revenue Act.—Owing to the prohibitory liquor laws now in force throughout the western provinces, there has been a decided increase in illicit distilling and many convictions have been secured. The rigid enforcement of the law is of great importance not only because of the deadly effects of consuming such liquor, but also because of the crimes and disorders which flow from such a potent intoxicant.

To strengthen our efforts, the Inland Revenue has decided to appoint a number of members of the force officers of the department, thus conferring on them extensive powers of search and seizure.

Indian Act.—Detachments have been established on many of the Indian reserves and patrols established to maintain law and order and enforce the special provisions of the Indian Act.

The Commissioner of Indian Affairs in western Canada has expressed his appreciation of the benefits resulting from this action.

MILITARY SERVICE ACT AND ORDERS IN COUNCIL UNDER THE WAR MEASURES ACT.

Military Service Act.—This Act was being enforced on the date of the Armistice, by the civil branch of the Canadian Military police, which, on conclusion of hostilities, was transferred to the Dominion police, and subsequently disbanded in January of this year, its duties being taken over by the mounted police. Hostilities having ceased, the further enforcement of the Act was not to secure reinforcements but to punish draft evaders. The chief offenders were those who did not register and ignored and defied the law, and these have been vigorously proceeded against, as well as others, who, by fraud or deliberate intention, succeeded in evading military service.

Orders in Council and War Measures Act.—The principal orders which required our attention were:—

(*a*) Registration and control of enemy aliens.
(*b*) Distribution and possession of prohibited literature.
(*c*) Suppression of unlawful and seditious associations.

The registration of enemy nationality in the large centres was carried out by officers appointed by the Department of Justice, who acted under the control of the Chief Commissioner of Dominion Police. In western Canada, assistance had been sought, and cheerfully given, by local authorities in the smaller centres and rural districts. The powers of the Chief Commissioner were transferred to me and the different registration offices taken over by us. From April to September, in the province of Manitoba, over 75,000 monthly reports were made.

Many aliens did not comply with the regulations and many hundreds were convicted for breaches thereof.

During the course of the war the enemy aliens gave no cause for anxiety and a comparatively small number was interned. Before the war, many had been employed in railway construction which ceased when the war broke out, and these people sought employment in the large industrial centres and filled the places of our fighting men. They, as well as all foreigners, received the most considerate treatment as long as they obeyed the laws of the country and pursued their ordinary avocations. The returned soldiers found them filling their jobs and enjoying prosperity. In Winnipeg, Calgary, Medicine Hat and other points, the resentment of the soldiers found expression in small disturbances provoked by the indiscreet acts and words of these people, who, as a body, have shown little appreciation of the just and fair treatment meted out to them by the people of this country. They have shown themselves ready to follow and support the extremists who play upon their ignorance and appeal to their national prejudices and sympathy for the central powers. Bolshevism finds a fertile field among them and is assiduously cultivated by the ardent agitator.

The assimilation of our large alien population is of the greatest importance and it demands wise and sympathetic action and constant attention.

Prohibited literature.—A number of convictions have been secured, but there is a flood of pernicious and mischievous literature not on the prohibited list. Under the cloak of freedom of thought and speech, this literature is being spread for the avowed purpose of overturning democratic government and destroying the foundation of civilization. Appeal is made to British fair play to protect them in their efforts to destroy British fair play.

Seditious Societies.—These have grown and thrived because of unrest. In the case of the Russian Workers Union, the principal members in the branch at Vancouver are under orders for deportation.

Naturalization.—In all cases of application by enemy aliens for naturalization papers, investigation is made by us. A great many have been reported on, entailing often long journeys to remote parts.

YUKON TERRITORY.

This territory has been free from serious crime. Labour conditions have been undisturbed and there have been no anarchical activities.

In addition to our ordinary duties, we perform those of the immigration inspectors at all points of entry; act as postmasters at outlying points. The officer commanding is fishery inspector and a member of the force is Customs officer at Rampart House.

Only 29 convictions were made:—

Offences against	property	3
"	" religion and morals	5
"	" the person	2
"	" Indian Act	5
"	" M.S.A.	1
"	" War Measures Act	2
"	" Yukon Ordinances	11

Active patrolling by water, by horses, and all means of transit was carried out, the total mileage being 96,978.

The usual patrol to Fort McPherson from Dawson, a round trip of 1,000 miles in an Arctic mid-winter, was carried out without incident.

NORTHWEST TERRITORIES.

With regard to law and order in the territories, I am able to make a satisfactory report. The two Eskimo murderers who were serving for life at our post at Fort Resolution were released and conveyed to their country at Coronation Gulf.

They will no doubt exert a salutary influence on their tribe as they will be able to inform them of the power and justice of the Government.

Our patrols in the Northwest Territories are very extended, covering as they do all ordinary routes of travel and visiting the different settlements and Indian reserves.

More traders are visiting the Arctic and the competition in purchasing furs is more keen, a decided benefit to the natives. The fur catch of 1918 was disappointing but the high prices paid compensated for this. The natives purchase freely and are well supported with food and clothing and even luxuries.

A sum of $6,206.84 was collected in custom duties.

Only one schooner, the *Herman*, succeeded in entering Beauport sea.

The game laws have been enforced and all traders and trappers have been obliged to take out licenses, $949 being collected.

The natives are satisfied and pleased with the new game laws and regulations issued thereunder, except the close season for muskrat which, they claim, and their claim is supported by our officers, should be extended until June 30. Skins are prime until then. These animals are much depended upon by the natives for food, and as they are very numerous on the Mackenzie delta and tributary streams, there seems to be no reason why the open season should not be extended.

As the traders have extended their operations along the Arctic coast as far as Coronation Gulf, it was found necessary to establish a detachment at the mouth of the Coppermine river.

Staff-Sergeant Clay and two constables left Herschell island on May 30, taking with them the Eskimos above referred to, on the Hudson's Bay Company's power schooner, *Ft. McPherson*.

No report has yet been received of their arrival.

In my last report, I mentioned that Corporal Conway has been absent for more than a year without word from him being received. I am glad to report his safe return from Coronation Gulf, bringing with him two Eskimos accused of murdering an Eskimo woman. The evidence available did not justify further action, and they were released.

Inspector Phillips, on the schooner *Herman*, tried to visit Banks land but owing to ice conditions, the ship could not proceed further east than Cape Parry.

I look for still further extension of our work in the Arctic and believe it will not be many years before there will be a chain of posts extending to Hudson bay.

On the eastern part of the Northwest Territories tributary to Hudson bay, we have a detachment, one sergeant and two constables, at Cape Fullerton, to which point it had been removed from Baker Lake.

The game in this vicinity during the summer and fall was very scarce and the natives had rather a trying time. The natives explain the scarcity of deer on account of the fact that during the fall we experienced a violent gale with much rain and sleet and this froze immediately it struck the ground and formed a hard crust. When snow came, the deer digging for moss experienced great difficulty in breaking through this crust and naturally wandered into other localities where they did not experience this difficulty, so that there were few deer in the immediate vicinity of the coast where this storm prevailed.

This scarcity of game seems to predominate the whole district (except up as far as Back's river where game is plentiful), for I am informed from all other points that the natives are having a hard winter and for the most part, subsisting on fish.

The conduct of the natives in this district has been orderly and no cases of crime have been reported.

The health of the natives is fairly good, but the hunger caused by the scarcity of game no doubt does not tend to good health.

From what can be learned from the natives and from other sources, there seems to be a greater increase in the birth rate amongst the natives, although starvation, no doubt, accounts for a great deal of mortality.

Owing to the scarcity of game, the natives, particularly those on the Kazan river have had a hard time and the Hudson's Bay Company have had to go to their assistance.

A report reached Sergeant Douglas in May of this year that a murder had been committed in 1918 at Rupert's Bay. This will be investigated by him.

On the 23rd August last, the American trading schooner *Finback* was wrecked in Cape Fullerton harbour. The assistance given by our men to the captain and crew of 14 men was most gratefully acknowledged by Captain Comer who in his letter of thanks says,—

> "It is a pleasure to write and report to you that these men were all your Government could wish."

There is a detachment at Port Nelson, and the non-commissioned officer acts as Indian agent for the reserves in that vicinity and at Fort Churchill. Last winter he conveyed, by dog sled, an insane Indian from Trout Lake to The Pas, nearly 750 miles, under very trying conditions, entailing severe hardships.

A report of a murder on the Belcher islands, near the east coast of Hudson bay, has been received, and it is intended to investigate next summer, which is as soon as it can be done.

ENGAGEMENTS, DISCHARGES, ETC.

Engagements—	
Engaged constables (3-years)	1,246
" " (1-year)	29
" special constables	83
Re-engaged after leaving	139
Deserters re-joined	6
	1,503
Reported off leave from C.E.F.—	
Twelve officers and 333 other ranks	345
Total increase	1,848
Discharges, died, etc.—	
Time expired	45
Died	4
Purchased	92
Deserted	45
Dismissed for bad conduct	37
" inefficiency	25
Invalided	167
Free discharge	6
Pensioned	5
Special constables discharged	69
	495
Granted free discharge after rejoining off leave with C.E.F.	69
Total decrease	564
Total increase (including 12 officers above mentioned) for the year 1919	1,284

Three officers were engaged in recruiting in eastern Canada from June to September.

One thousand two hundred and seventy-five men were engaged but a percentage turned out unsuitable, chiefly for physical unfitness. Examining surgeons do not recognize that the force has no place for weaklings and that only men of sound health and robust physique can carry on.

One hundred and thirty-nine re-engaged after leaving, most of whom had served in the war.

Nine hundred men are required to bring the force to authorized strength and I hope to secure a proportion of these during the winter months. We have not barrack accommodation at present for many more and therefore cannot recruit until next spring.

Died—

Reg. No. 979 Staff Sergeant Bossange, G.H.L
4091 Sergeant White, R. J.
6482 Constable Graham, D.
7552 Constable Peachey, C.S.

Pensioned—

Reg. No. 3156 Sergeant Major Lett, H.
328 Staff Sergeant Evans, O.W.
2850 Staff Sergeant Fyffe, M.W.
3357 Sergeant Holt, F.J.
2662 Corporal Aspdin, C.E.

OFFICERS.

Promoted Assistant Commissioner—
Superintendent W. H. Routledge.

Promoted Superintendent—
Inspector R. Y. Douglas.

Re-instated as Inspectors—
Inspector M. H. Vernon,
Inspector R. L. Cadiz.

Promoted Inspectors—

Reg. No. 4754 Staff Sergeant Prime, C.
157 Staff Sergeant Stuart, C.R.W.
5750 Staff Sergeant Hill, C.H.
4793 Sergeant Major Irvine, T.H.
5117 Sergeant Major Mead, F.J.
4557 Sergeant Major Caulkin, T. B.
4314 Sergeant Major Wilcox, C.E.
5185 Sergeant Wunsch, T.V.S.

Retired to Pension—
Assistant Commissioner J. O. Wilson.

Died—
Inspector F. W. Chaney.

From those granted leave from the R.N.W.M. Police, without pay, and transferred to the C.E.F. for service with "A" Squadron, R.N.W.M. Police overseas cavalry draft, C.E.F., 12 officers and 334 other ranks have reported and been re-taken on the strength, of which number 69 other ranks subsequently applied for, and were granted their discharge from the R.N.W.M. Police, not being re-taken on the strength of the force for duty.

On October 1, 1918, 5 officers and 200 other ranks were transferred to the C.E.F. and granted leave from the R.N.W.M. Police, without pay, to join "B" Squadron, R.N.W.M. Police Cavalry, C.E.F. (Siberia). Of this number, 5 officers and 45 other ranks have reported back to the R.N.W.M. Police and been re-taken on the strength of the force and 148 other ranks reported and were granted their discharge from the R.N.W.M. Police on account of having been specially engaged for service with this squadron.

According to the above figures, 5 officers and 193 other ranks are accounted for, leaving 7 other ranks still to report.

Two non-commissioned officers who were granted leave, without pay, from the R.N.W.M. Police, to join other branches of the C.E.F. for service in Siberia, have reported back and have been re-taken on the strength of the R.N.W.M. Police for duty.

HORSES.

Horses purchased (including 239 purchased from C.E.F.)		545
Cast and sold	69	
Sold to Department of Militia and Defence for C.E.F. (S.)	217	
Died	8	
Destroyed	12	
Lost	1	
		307
Total gains, horses	....	238
Pack Ponies—		
Cast and sold		1
Destroyed		1
Total loss, ponies		2

TRANSPORT.

Water.—Three sea-going motor boats were purchased. The *Chakawana,* from the Imperial Munitions Board, stationed at Prince Rupert, for service on the British Columbia coast. The *Victory*, stationed at Herschell island, for service in the Arctic.

The *Duncan,* purchased from the Department of Railways and Canals, stationed at Port Nelson, for service in Hudson bay.

In addition the *Lady Borden* is stationed at Cape Fullerton, for service in Chesterfield inlet and the northern part of Hudson bay.

Mechanical.—Purchased this year: 10 Reo trucks, 15 motorcycles, 2 automobiles.

Wheeled.—Ten heavy wagons transferred from ordnance stores.

The mechanical transport has greatly increased our efficiency. The motorcycles have proved especially useful.

HEALTH.

I regret to have to record five deaths during the year.

The principal medical officer reports that 1,230 cases were treated during the year and that the general health of the force has been very satisfactory.

Reports show that the sanitary condition of all posts and barracks is good.

BARRACKS.

Owing to the extension of our jurisdiction and increase of strength, it was found necessary to considerably increase our barrack accommodation.

At Regina, a commodious modern building of brick is in course of erection, and is designed to house 140 of all ranks; it contains dining, reading and billiard rooms, etc.

At Brandon, the Department of Militia and Defence permitted us to occupy the armoury, which, with slight alteration and addition, affords accommodation for 160 all ranks.

At Winnipeg, we have not yet obtained the necessary barracks for the strength to be stationed at that point. A vote was taken for new buildings but has not yet been expended.

At Fort William, we were able to secure suitable quarters although the location is not satisfactory as it is in the centre of the city.

At Vancouver, suitable buildings were rented and men and horses are comfortably quartered, but the location in the heart of the city with no open ground is undesirable for many reasons.

The Government has recently authorized the purchase of a suitable location with splendid barrracks in Shaughnessy Heights. It is proposed to erect officers' quarters and stables.

Our old buildings have been maintained in repair.

On the whole, the force is most comfortably housed for the winter.

CLOTHING.

The quality has been excellent and a marked improvement has been made in the cut and fashion, especially the pea-jacket and slicker. The supply has not always been adequate as the cloth has to be made and the mills could not deliver as rapidly as required. However, the clothing is now coming forward in sufficient quantity.

RATIONS, Etc.

The supply of rations has been adequate and the quality up to standard called for by the contracts.

FORAGE.

Owing to the partial failure of the hay crop and the general rise of prices, our forage has cost us more than ever before. In southern Alberta there was no hay and we are shipping hay from Manitoba to our posts in that area.

TRAINING.

The training of the recruits has been carried on under high pressure. The instructional staff, under Superintendent Worsley, has worked faithfully and with excellent results. We were fortunate in securing a number of very competent instructors from the C.E.F. who, added to our old permanent instructors, formed a very competent staff.

It is no small task to absorb and train 1,200 recruits and turn them into highly trained men of the force, the members of which are called upon to act individually and at times collectively in the execution of their important duties.

OVERSEAS CONTINGENTS.

"A" Squadron.—This squadron was formed in England from our overseas cavalry draft and proceeded to France October 7, 1918. It was immediately sent to the front. For a short time it was attached to the Canadian Light Horse, and subsequently was attached to Corps Headquarters. Troops were attached to different divisions and served in the battle area until the armistice. One troop was sent to Bonn.

In December, the Government decided to recall our contingent to Canada. The first draft arrived at Regina in March and was followed by a second and third, which arrived in Winnipeg on May 21, and was there transferred from the C.E.F. back to the force.

A detailed report by Inspector Jennings of the work and services of the overseas cavalry draft has been submitted to the honourable the minister, who was good enough to express his appreciation of their services.

"B" Squadron.—This squadron was organized under the command of Major Worsley for service in Siberia. It was horsed from the force and had in its ranks a large percentage of skilled horsemen.

It was quartered in the vicinity of Vladivostock and was conspicuous for its efficiency and good conduct, and although it had not the good fortune to see active service, it reached a high state of efficiency.

It returned to Regina, July 7.

The honourable the minister was also pleased to express his satisfaction and high appreciation of the services rendered by this squadron.

The past year has been one of great activity. All ranks have worked with earnestness to establish the force in a high state of efficiency, which had been seriously affected by the war. Old-members of the force, many of whom won their commissions and many honours; have returned to the ranks, and their influence and example are of inestimable value.

During the visit of His Royal Highness the Prince of Wales, to Western Canada, the force had the high honour of supplying mounted escorts at Fort William, Winnipeg, Edmonton, Vancouver, Victoria and Regina.

The headquarters were inspected by H.R.H. the Prince of Wales, who was graciously pleased to express his approval and appreciation of the force in the following words:—

"It is not only a real pleasure, but a great privilege to me to inspect you on parade this morning and to visit the depot of the Royal Northwest Mounted Police, though this is by no means my first introduction to the force, which I have seen a great deal of throughout my travels in the West, and I have been very impressed by it particularly by the mounted escorts and guards that it has furnished for me in all the big cities.

I am interested in the history of the force, how it was organized 46 years ago, at a time when treaties were being made with the Indians, whereby the lands of the northwest were made available for settlement by the white people. So well has it administered justice between all parties that it has won for itself respect and the confidence of both white people and Indians, and no new country has ever been opened up with less crime and violence than this Northwest Territory.

Up in the Klondike, when wild and lawless men thronged the Yukon gold diggins, life and property was as safe in the care of the Royal Northwest Mounted Police as in any other part of the Dominion, and the splendid police work which they have done and continue to do in the frozen wastes of the North, under the most trying conditions of hardship and privation, is recognized and appreciated everywhere to-day.

I know that at the declaration of war, the whole force wanted to join up, though that was naturally impossible. The first to be allowed to go were many Imperial reservists, who have always constituted a large percentage of its members. Then by degrees, men could be spared, and served in the Canadian cavalry, infantry and other units, and I know many of the last joined men are war veterans.

I was with Sir Arthur Currie, Canadian Corps Commander, when he inspected the Royal Northwest Mounted Police squadron when they arrived in France a year ago, so that the war records of the force have been of the same high standard as its records in the past.

The Royal Northwest Mounted Police is a splendid force, magnificent traditions, whose fame is as wide as that of the Dominion itself.

I know the men of the force of to-day are proving themselves worthy of those traditions and will ever uphold them."

I have the honour, to be, sir,
Your obedient servant,

A. BOWEN PERRY,
Commissioner.

APPENDIX A.

STRENGTH AND DISTRIBUTION.

DISTRIBUTION.—State of the Force by Divisions, September 30, 1919.

Place.	Commissioner.	Asst. Commissioner	Superintendents.	Inspectors.	Surgeons or Asst. Surgeons.	Vet. Surgeons.	Staff Sergeants.	Sergeants.	Corporals.	Constables.	Supernumerary Constables.	Total.	Horses.				Dogs.
													Saddle.	Team.	Ponies.	Total.	
"Depot" Division.																	
Regina	1	2	2	11	1	1	13	38	61	683	14	827	262	15	....	277	....
Weyburn	....	....	....	1	....	....	....	1	2	3	....	7	1	....	....	1	....
Northgate	....	....	....	....	....	....	....	....	1	....	....	1	1	....	....	1	....
North Portal	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....
Short Creek	....	....	....	....	....	....	....	....	....	1	....	1	1	....	....	1	....
Marieathal	....	....	....	....	....	....	....	....	1	....	....	1	1	....	....	1	....
Assiniboia	....	....	....	....	....	....	....	1	....	1	....	2	2	....	....	2	....
Moosejaw	..	....	....	....	....	....	1	....	1	1	....	3	1	....	....	1	....
Yorkton	....	....	....	....	....	....	....	1	....	3	....	4	2	....	....	2	....
Melville	....	....	....	....	....	....	....	1	....	....	....	1	1	....	....	1	....
Fort Qu'Appelle	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....
Goschen	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....
Elmore	....	....	....	....	....	....	....	....	1	....	....	1	1	....	....	1	....
Broadview	....	....	....	....	....	....	....	1	....	....	....	1	1	....	....	1	....
Kamsack	....	....	....	....	....	....	....	1	....	....	....	1	1	....	....	1	....
Balcarres	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....
Meyronne	....	....	....	....	....	....	....	....	1	....	....	1	1	....	....	1	....
Punnichy	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....
Ottawa	....	....	....	3	....	....	2	....	2	....	9	16	....	....	....	....	....
On leave	....	....	....	1	....	....	....	....	....	9	1	10	....	....	....	....	....
On Command	....	....	....	1	....	....	....	2	....	16	1	20	....	....	....	....	....
Totals	1	2	2	17	1	1	16	47	74	717	24	902	276	15	....	291	....
"A" Division.																	
Maple Creek	....	....	1	1	....	....	1	1	2	10	3	19	14	10	....	24	....
Swift Current	....	....	....	....	....	....	....	1	....	....	....	1	1	....	....	1	....
Shaunavon	....	....	....	....	....	....	....	....	....	1	....	1	1	....	....	1	....
On command	....	....	....	....	....	....	1	....	....	....	....	1	1	....	....	1	....
Totals	....	....	1	1	....	....	2	2	2	11	3	22	17	10	....	27	....
"B" Division.																	
Dawson	....	....	1	1	....	....	3	1	3	11	2	22	2	6	....	8	....
Atlin	....	....	....	....	....	....	....	1	....	....	....	1	....	1	....	1	....
Carcross	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....
Carmacks	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	4
Champagne	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....
Dawson Town Station	....	....	....	....	....	....	....	....	....	2	....	2	....	....	....	....	....
Forty Mile	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....
Granville	....	....	....	....	....	....	....	....	....	1	....	1	1	....	....	1	....
Mayo	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....
Rampart House	....	....	....	....	....	....	....	....	....	2	....	2	....	....	....	....	7
Teslin	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....
White Pass Summit	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....
White Horse	....	....	....	1	....	....	....	....	1	6	1	9	3	2	....	5	....
Moosehide	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....
Halfway	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	13
On Command	....	....	....	....	....	....	....	....	....	2	....	2	....	....	....	....	....
On leave	....	....	....	....	....	....	1	....	....	1	....	2	....	....	....	....	....
Totals	....	....	1	2	....	..	5	3	6	28	4	49	6	9	....	15	24

STRENGTH AND DISTRIBUTION.—*Continued.*

Place.	Commissioner.	Asst. Commissioner	Superintendents.	Inspectors.	Surgeons or Asst. Surgeons.	Vet. Surgeons.	Staff Sergeants.	Sergeants.	Corporals.	Constables.	Supernumerary Constables.	Totals.	Horses.				Dogs.
													Saddle.	Team.	Ponies.	Total.	
"D" Division.																	
Winnipeg			1	2			1	2	8	32	1	47	9	2		11	
Brandon				1				1	2	5		9	6			6	
Boissevain							1					1	1			1	
Crystal City									1			1	1			1	
Dauphin							1			3		4	3			3	
Emerson								1		1		2	2			2	
Fort William				1				2	4	17	1	25	18	2		20	
Gretna									1			1	1			1	
Fort Frances										1		1					
Hodgson										1		1	1			1	
Lac du Bonnet										1		1	1			1	
Norway House										2		2					
Sprague										1		1					
On Command							1		1	2		4					
Totals			1	4			4	6	17	66	2	100	43	4		47	
"E" Division.																	
Victoria				1					1			2					
Esquimalt								2	2	11	1	16	6			6	
Nanaimo								1				1	2			2	
Port Alberni								1				1					
Cumberland									1	1		2	2			2	
Grand Forks				1			1		1	5	1	9	19			19	
Nelson								1		1		2					
Midway									1	1		2	2			2	
Prince Rupert				1			1	1	1	6		10					
Hazelton									1	2		3	2			2	
Prince George									1	2		3	2			2	
Kamloops								1				1					
On Command									1	1		2	2			2	
Vancouver			1	4			2	7	9	108	1	132	113	4		117	
On leave									1	1		2					
Totals			1	7			4	14	20	139	3	188	150	4		154	
"F" Division.																	
Prince Albert			1	1			4	1	3	15	3	28	11	5		16	
Battleford				1			2		3	2	1	9	10	9		19	
Fullerton								1		3		4					28
Humboldt								1		1		2	1			1	
Saskatoon								2		2		4					
The Pas									1			1					
Port Nelson								1		1		2					
Totals			1	2			6	6	7	24	4	50	22	14		36	28
"G" Division.																	
Edmonton			1	1			3	7	5	38	5	60	36	4		40	
Peace River				1			1	1	2	3	1	9	11			11	
Grande Prairie								1				1	2			2	
Fort Fitzgerald				1					1	1	2	5	1		1	2	9
Fort Resolution									1	1	1	3					8
Fort Simpson								1				1					5
Herschel Island				1						2		3					9
Coppermine River							1			1		2					
Fort MacPherson									1	2		3					10
Brule									1			1					
Jasper							1					1	1			1	
Pocahontas								1				1	1			1	
Nordegg									1	1		2					
Athabaska									1			1	1			1	

STRENGTH AND DISTRIBUTION.—*Concluded.*

Place.	Commissioner.	Asst. Commissioner.	Superintendents.	Inspectors.	Surgeons or Asst. Surgeons.	Vet. Surgeons.	Staff Sergeants.	Sergeants.	Corporals.	Constables.	Supernumerary Constables.	Total.	Saddle.	Team.	Ponies.	Total.	Dogs.
"G" Division.—Con.																	
Grouard										1		1					
On Command									3	1	1	5	21			21	
On leave								1		1		2					
Totals			1	4			6	12	16	52	10	101	74	4	1	79	41
"K" Division.																	
Lethbridge			1	1			3	4	10	50	5	74	48	8		56	
Banff				1				1	1	5	1	9	5			5	
Bankhead									1	1		2	2			2	
Blairmore									1	1		2	1			1	
Brocket										1		1	1	1		2	
Calgary				1			1	3	4	7	1	17	26	7		33	
Canmore									1	1		2	2			2	
Corbin									1	1		2	2			2	
Drumheller									1	3		4	3			3	
Fernie				1				2		6	1	10	5			5	
Field									1			1	1			1	
Lake Louise									1			1	1			1	
Macleod			1	1			3	2	2	29	5	43	43	17		60	
Medicine Hat								1	1	1		2	2			2	
Michel									1	1		2	2			2	
Pincher Creek								1		1		2	2			2	
Stand Off									1	4	1	6	2			2	
Taber									1	1		2	2			2	
Waterton Park										1		1	1			1	
On Command					1					1		2					
On leave				1						1		2					
Totals			2	6	1		7	14	27	116	14	187	151	33		184	

RECAPITULATION.

Regina District	1	2	2	17	1	1	16	47	74	717	24	902	276	15		291	
Maple Creek District			1	1			2	2	2	11	3	22	17	10		27	
Dawson "			1	2			5	3	6	28	4	49	6	9		15	24
Winnipeg "			1	4			4	6	17	66	2	100	43	4		47	
Vancouver "			1	7			4	14	20	139	3	188	150	4		154	
Prince Albert "			1	2			6	6	7	21	4	50	22	14		36	28
Edmonton "			1	4			6	12	16	52	10	101	74	4	1	79	41
Lethbridge "			2	6	1		7	14	27	116	14	187	151	33		184	
On Command in England (Inspr. R. L. Cadiz)				1								1					
Totals	1	2	10	44	2	1	50	104	169	1153	64	1600	739	93	1	833	93

REPORT

OF THE

SECRETARY OF STATE

OF

CANADA

FOR THE

YEAR ENDING MARCH 31, 1919

PRINTED BY ORDER OF PARLIAMENT.

OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

[No. 29—1920.]

To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc., Governor General and Commander in Chief of the Dominion of Canada.

My Lord Duke,—

I have the honour to lay before Your Excellency the accompanying report of the work performed in the four branches of my department during the twelve months ended March 31, 1919.

I have the honour to be, My Lord Duke,

Your Excellency's most obedient servant,

MARTIN BURRELL,

Secretary of State.

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REPORT

OF THE

UNDER SECRETARY OF STATE

To the Honourable
MARTIN BURRELL,
Secretary of State of Canada.

SIR,—I have the honour to submit to you a statement of the work of the Correspondence Branch of the Department of the Secretary of State for the year ended March 31, 1919.

INCORPORATION OF COMPANIES.

The number of companies incorporated under The Companies Act during the fiscal year 1918-19 was 512 with a total capitalization of $214,326,000, and the number of existing companies to which Supplementary Letters Patent were issued was 117, of which 69 increased their capital stock $67,583,625, 11 decreased their capital stock $2,115,985, the remaining 37 being granted Supplementary Letters Patent for various objects such as changing names, extending powers, etc. There were also issued 37 charters incorporating Associations without share capital under The Companies Act Amendment Act, 1917, making a total of 666 charters and supplementary charters issued during the year, an increase of 15 as compared with the previous year; whilst the total capitalization of new companies and the increased capital of existing companies amounted to $279,793,640.

Particulars as to the capital stock, etc., of the companies incorporated or granted Supplementary Letters Patent during the twelve months, together with the date, etc., of the *Canada Gazette* in which the objects and powers are set forth, will be found in my report of the work of the Registrar's Branch of the Department.

CANADA TEMPERANCE ACT.

During the fiscal year petitions were received for the repeal of the Act in the counties of Westmorland and Albert, New Brunswick, and action was taken thereon in accordance with the provisions of chapter 30, 7-8 George V, "An Act to amend an Act in aid of Provincial Legislation prohibiting or restricting the sale or use of Intoxicating Liquors," which provides for the suspension of the Act by Order in Council, without a vote, in places from which petitions for repeal have been received.

The Act is accordingly now under suspension in these counties, and is no longer in force anywhere in the Province of New Brunswick.

The Act is now in force in the following counties and cities:—

Ontario.—Counties of Peel, Huron, Perth and District of Manitoulin.

Quebec.—City of Thetford Mines, City of Quebec, and Counties of Brome, Stanstead, Compton and Missisquoi.

Nova Scotia.—Counties of Digby, Guysborough and Yarmouth.

Manitoba.—Lisgar and Marquette.

The Act is not in force elsewhere in the provinces or territories.

RECEIPTS AND EXPENDITURES.

Subjoined is a statement of the revenue of the department for the fiscal year ended March 31, 1919:—

Annual Returns of Companies—fees	$ 17,668 00
Charters and supplementary charters	173,183 00
Commissions	520 00
Certificates of Deposit, By-laws, etc	212 00
" Filing, Companies Amendment Act, 1917	413 50
" Legalization	119 50
" Registration	23 00
" Incorporation, Boards of Trade	32 50
" Registration, Trade Unions	4 00
Certificates, copies and certified copies	944 00
Certified copies of Certificates of Naturalization, Chap. 77, R.S.C. (1906)	916 25
Certificates of Naturalization, The Naturalization Act, 1914	216 00
Declarations, The Naturalization Act, 1914	1 00
Exemplifications	8 00
Refunds, cost of extra notices in *Canada Gazette*	12 00
Sundry	1 25
Total	$194,274 00

Of the foregoing amount, the sum of $19,666.90 was transferred to the King's Printer for advertising notices of Letters Patent under the Companies Act in the *Canada Gazette*, $4,232 was refunded upon applications withdrawn or not granted and $196 was transferred to other departments, leaving a net amount of $170,179.10.

The net revenue exceeded the expenditure of the department for salaries and contingencies by $90,003.55 and after providing for the customary expenditure, under the Naturalization Act, the cost of supplying the library of the High Commissioner's Office in London with Canadian books and periodicals; the annual subscription of the Government to the International Catalogue of Scientific Literature; expenses under the Canada Temperance Act, etc.,—left a credit balance of $82,429.14.

WAR WORK.

During the year the department has been assigned important duties in the matter of investigating and reporting upon claims of persons in Canada against the enemy for loss and damage occasioned by the war. By Order in Council of the 15th November, 1918, the undersigned was appointed an officer to collect claims of Canadians for

damages suffered through the illegal warfare of the enemy, also claims against Canadians for breaches of contract arising out of the operation of the Statutory Trading List in neutral countries. The task of collecting claims against Russia was also assigned the department. "The Enemy Debts Committee," of which the Secretary of State of Canada is chairman, was constituted by Order in Council of the 11th of November, 1918, and commissioned to consider and report upon the arrangements to be adopted for the liquidation of the commercial, banking, and the financial transactions between Canadian and enemy persons, the completion of which was prevented by the war, and to investigate and report upon all claims in relation thereto. In pursuance thereof the department has been engaged in collecting information respecting and investigating enemy debts and property and property of Canadians requisitioned, sequestrated or destroyed by enemy Governments.

The filing and tabulating of these claims, as well as the correspondence relating thereto, has been conducted in the Correspondence Branch. The claims received have been numerous. The amount represented by claims arising out of illegal enemy warfare has reached an approximate total of $42,238,000, and claims against Russia, $5,769,637.

The war work of the department includes also the administration of the War Charities Act, 1917. A separate report thereon will be found in the latter pages of this volume.

My report of the work done in the registrar's branch of the department follows immediately hereafter. In addition to the synopses of charters of incorporation and supplementary charters, it contains a list of commissions issued to public officers.

I have the honour to be, sir,

Your obedient servant,

THOMAS MULVEY,

Under-Secretary of State.

Ottawa, April 1, 1919.

REPORT OF THE REGISTRAR'S BRANCH.

DEPARTMENT OF THE SECRETARY OF STATE,
OTTAWA, April 1, 1919.

The Hon. MARTIN BURRELL,
Secretary of State of Canada.

SIR,—I have the honour to submit for your information the following statement of the work performed in the Registrar's Branch of your department for the year ended March 31, 1919, viz.:—

Documents.	Engrossed.	Recorded.	Total.
Authority of His Excellency the Governor General under Section 591, Criminal Code, Chapter 146, R. S. C., 1906	1	1	2
Boards of Trade Certificates		6	6
[1]Bonds		14	14
Cancellations	20	20	40
Charters and supplementary charters	666	666	1,332
Commissions	38	45	83
Decree of Court		1	1
Deeds, releases, surrenders, etc		298	298
Exemplifications	1	1	2
Leases, assignments, etc	14	14	28
Letters patent of annuity	4	4	8
Letters patent summoning to the Senate	3	3	6
Licenses of occupation	3	3	6
Licenses *re* enemy property	10	10	20
Licenses *re* printing papers and pamphlets in alien enemy languages	24	24	48
Notices of changes *re* general bonds		85	85
Orders-in-Council, transferring lands		4	4
Plans and description		8	8
Proclamations	21	28	49
Quit claims	11	11	22
Trade Unions (returns, etc)		3	3
Warrants *re* censorship	36	36	72
" " courtmartial	1	1	2
" " trading with the enemy	9	9	18
" under Fugitive Offenders Act	1	1	2
" of extradition		4	4
" " recipias	3	3	6
Writs of assistance	4		4
" election		1	1
Land Patents.			
[2]Ordnance land sales	4	4	8
Special grants	18	18	36
	892	1,326	2,218

[1] An annual statutory return of bonds is submitted to Parliament under Section 32 of Chapter 1, R.S.C., 1906, giving full particulars of the bonds registered in the branch since last return.

[2] Quarterly returns of these lands were sent to the registrar of each city and county in the Province of Ontario, and to the secretary-treasurer of each city and county in the Province of Quebec in which patents were issued, and a copy of the several returns in Ontario was also sent to the provincial secretary of Ontario.

During the year copies have been furnished of over 5,000 pages of documents, manuscripts and records, including 485 certified copies of naturalization certificates.

The number of companies incorporated under the Companies' Act and amending Acts during the fiscal year 1918-19 was 512, with a total capitalization of $214,326,000 and the number of existing companies to which Supplementary Letters Patent were issued was 117, of which 69 had increased their capital stock $67,583,625, 11 decreased their capital stock $2,115,985, the remaining 37 were granted supplementary letters patent for various purposes such as changing names, extending powers, etc. There were also issued 37 charters of association (without share capital) under the Companies' Act Amendment Act, 1917, making a total of 666 charters and supplementaries issued during the year, an increase of 15 as compared with previous year; while the total capitalization of new companies and the increased capital of existing companies amounted to $279,793,640. The usual synopses (with index thereto) giving full particulars of all companies incorporated, as well as of all existing companies to which were issued supplementary letters patent during the fiscal year, is appended hereto.

The large number of inquiries and applications for copies of Naturalization Certificates during the year, has entailed a great deal of searching through the registers containing the lists of Naturalized Aliens.

The searching for names through the Dominion and Provincial lists of incorporated companies in order to prevent duplication, has also occupied much time.

A considerable amount of miscellaneous work has been performed such as proof reading, furnishing memoranda of various kinds and supplying information from our indices and records.

A list of public officers to whom commissions have been issued since last return is also submitted herewith.

All of which is respectfully submitted.

THOMAS MULVEY,

Deputy Registrar General of Canada.

SYNOPSES OF LETTERS PATENT

ISSUED TO

COMPANIES INCORPORATED

UNDER

"THE COMPANIES ACT," PART I OF CHAPTER 79, R.S.C., 1906,

AND AMENDING ACTS.

From April 1, 1918, to March 31, 1919.

"R. & W. GELINAS, LIMITEE."

Incorporated April 3, 1918. - - - - - - - - Amount of capital stock, $49,000. Number of shares, 490.—Amount of each share, $100.

Corporate Members.—Raoul Gélinas, Wilbrey Gélinas, Adélard Lamy, Freddy Gélinas, and Albina Lamy Gélinas, merchants; Zéphirin Arcand, gentleman; and Alice Lamy, teacher, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 3638, *Canada Gazette*, 1917-18.

"DOMINION METAL EXPORTING COMPANY, LIMITED."

Incorporated April 3, 1918. - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Michael Tessler, Joseph Gershfeld, and Benjamin Starikoff, junk dealers; Edward Gordon Barrett, and Leonard Richard Barrett, manufacturers, all of Winnipeg, Man.

First or Provisional Directors.—Michael Tessler, Edward Gordon Barrett and Leonard Richard Barrett.

Chief place of Business.—Winnipeg, Man.

Objects of the Company.—*Vide* p. 3578, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued April 5, 1918, to

"FURUYA & NISHIMURA, LIMITED,"

Changing the corporate name of the said company to that of

"MEIJI TRADING COMPANY, LIMITED."

Vide p. 3573, *Canada Gazette*, 1918.

"THE (CANADIAN) YOUNG HIGH-VELOCITY CARBURETOR COMPANY."

Incorporated April 5, 1918 - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000—Amount of each share, $100.

Corporate Members—Henry Hague Davis, Edward Henry Brower, and Lawrence Alfred Landriau, solicitors; Harrison Bray Spaulding, student-at-law; and Nellie Boynes, book-keeper; all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business—Toronto, Ont.
Objects of the Company—*Vide* p. 3582, *Canada Gazette*, 1917-18.

"NATIONAL SALES CHECK BOOKS, LIMITED."

Incorporated April 5, 1918 - - - - - - - - Amount of capital stock, $49,000. Number of shares, 490—Amount of each share, $100.

Corporate Members—Howard Salter Ross, Eugene Réal Angers, and Isidore Popliger, advocates; Henry Murray Gardner, chartered accountant; and Arthur Claydon, accountant; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company—*Vide* p. 3583, *Canada Gazette*, 1917-18.

"WINDSOR CANNING COMPANY, LIMITED."

Incorporated April 5, 1918 - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000—Amount of each share, $100.

Corporate Members—Gerald Augustine Coughlin, advocate; Francis George Bush, book-keeper; George Robert Drennan, stenographer; Herbert William Jackson, and Michael Joseph O'Brien, clerks; all of Montreal, Que.
First or Provisional Directors—Gerald Augustine Coughlin, Francis George Bush, and George Robert Drennan.
Chief place of Business—St. Johns, Que.
Objects of the Company—*Vide* p. 3584, *Canada Gazette*, 1917-18.

Supplementary Letters Patent, issued April 5, 1918, to

"THE O. LETOURNEAU COMPANY, LIMITED,"

Changing the corporate name of the said company to that of

"I. M. RUBINOVITCH, LIMITED."

Vide p. 3573, *Canada Gazette*, 1918.

"CANADIAN OVERSEAS, LIMITED."

(As a private company.)

Incorporated April 5, 1918 - - - - - - - - Amount of capital stock, $49,000. Number of shares, 490.—Amount of each share, no nominal or par value.

Corporate Members.—Thomas Robinson and Minnie Blumenthal, secretaries, Benjamin Harrison Marshall and Richard William Craft, clerks, and Alice Rohrig, stenographer, all of New York, N.Y., U.S.A.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 3683, *Canada Gazette*, 1917-18.

SESSIONAL PAPER No. 29

"CAN CONSERVERS OF CANADA, LIMITED."

Incorporated April 5, 1918. - - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Margaret Duncan Gray and Thester Anna McClennan, stenographers; Lorne Arthur Lillico, Robert Martin, and Cyril Scotts Newton, Esquires; all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 3575, *Canada Gazette*, 1917-18.

"THE VETERAN, LIMITED."

Incorporated April 5, 1918. - - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John Roger Anderson, managing director; Kenneth Clark Macpherson, military man; Robert McLean Stewart and Albert James Banks, clerks, and John Alexander Stevenson, editor, all of Ottawa, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 3576, *Canada Gazette*, 1917-18.

"GRAIN GROWERS AUTO TRACTOR COMPANY OF CANADA, LIMITED."

Incorporated April 6, 1918 - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Joseph Hormidas Rainville and Joseph Oscar Gagnon, advocates; Albert Maynard, Alexandre Brodeur, and Ernest Rainville, clerks; all of Montreal, Que.
First or Provisional Directors.—Joseph Hormidas Rainville, Joseph Oscar Gagnon and Albert Maynard.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 3574, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued April 8, 1918, to

"GRACE & COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $100,000 to the sum of $500,000 being an addition of 4,000 shares of $100 each, to the present capital stock.

Vide p. 3573, *Canada Gazette*, 1918.

"BROOKS ELEVATOR COMPANY, LIMITED."

Incorporated April 9, 1918. - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Charles Stuart Anderson Rogers, and Harold St. Clair Searth, barristers-at-law; William Miller Shaw, accountant; Vivian Anderson Leslie, student-at-law; and Sara Louise Kay, stenographer, all of Winnipeg, Man.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Winnipeg, Man.
Objects of the Company.—*Vide* p. 3585, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued April 8, 1918, to

"ATLAS SILK WAIST M'F'G. CO., LIMITED."

Changing the corporate name of the said company to that of Simon's Ladies' Wear, Limited.

Vide p. 3573, *Canada Gazette*, 1918.

"THE BELGIAN CHILDREN'S RELIEF FUND OF MONTREAL."

(Association.)

Incorporated April 11, 1918. - - - - - - - Without share capital.

Corporate Members.—The Right Honourable Baron Shaughnessy, of Montreal, Que., and Ashford, County of Limerick, Ireland; The Right Honourable Baron Atholstan, of Huntingdon, Que., and Edinburgh, Scotland; Honourable Raoul Dandurand, a Member of the Senate of the Dominion of Canada; James Carruthers, merchant, and Frank Scott and Ferd. Van Bruyssel, gentlemen, of Montreal, Que.; and Maurice Goor, of Ottawa, Ont., Consul General of Belgium.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 3681, *Canada Gazette*, 1917-18.

"P. PASTENE & CO., LIMITED."

Incorporated April 12, 1918. - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Aubrey Huntingdon Elder, and Felix Winfield Hackett, advocates; Darley Burley-Smith, manager; John Bourgeois Woods, student-at-law; and Kathleen Gale, stenographer, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 3687, *Canada Gazette*, 1917-18.

"LAUZON ENGINEERING, LIMITED."

Incorporated, April 12, 1918. - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—Joseph Gosselin, Senior, and Joseph Gosselin, Junior, general contractors; Harry Antoine Paquette, manager, and Emile Hervé Dion, physician, all of Levis, Que.; and Captain Joseph Blais, of Lauzon, Que., merchant.

First or Provisional Directors.—Joseph Gosselin, Senior, Joseph Gosselin, Junior, and Harry Antoine Paquette.

Chief place of Business,—Levis, Que.

Objects of the Company.—*Vide* p. 3685, *Canada Gazette*, 1917-18.

"THE WESTERN CANADA'S JEWISH FUND FOR THE RELIEF OF WAR SUFFERERS."

(Association.)

Incorporated, April 12, 1918. - - - - - - - - - - - Without share capital.

Corporate Members.—Marcus Hyman, Walter Gorsey and Elisha Arakie Cohen, barristers-at-law; Benjamin Schachter, commercial traveller; Solomon Almasoff and Meyer Averbach, teachers; Hyman Goldin, bookbinder; Kalman Waldman, Myer Berchman, Isaac Galsky, Samuel Ginsburg, Max Abraham Faurer and

Isadore Dworkin, merchants; Pierce Baker, printer; Charles Mankovsky, wood dealer; Charles Goldstein, shoemaker; Luis Segal, sign painter; Louis Rosenthal, blacksmith; Max Cierulnicoff, tailor; Maurice Waisman, insurance broker; Samuel Greene, harness maker; Abraham Travis, carpenter; Moses Nydis, painter; Harry Emanuel Wilder, publisher; Nathan Cohen, agriculturist; Neiman Joseph Weidman, wholesale grocer, and Claude Meyer Hyman, private, all of Winnipeg, Man.

First or Provisional Directors.—Walter Gorsey, Solomon Almasoff, Meyer Averbach, Kalman Waldman, Myer Berchman, Pierce Baker and Charles Mankovsky.

Chief place of Business.—Winnipeg, Man.

Objects of the Company.—*Vide* p. 3681, *Canada Gazette,* 1917-18.

"ASSOCIATED KIN OF CANADIAN EXPEDITIONARY FORCES."

(Association.)

Incorporated, April 12, 1918. - - - - - - - - - - - - Without share capital.

Corporate Members.—Gordon Wright, merchant; John Miller McEvoy, barrister; Lewis Norman Tucker, Rector St. Paul's Cathedral; John Hugh Laughton, salesman; John Charles Spence, traveller; David Heggie Arnott, physician, and Elinore May Davies, stenographer, all of London, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—London, Ont.

Objects of the Company.—*Vide* p. 3780, *Canada Gazette,* 1917-18.

"SUPERIOR SALES COMPANY, LIMITED."

(As a private company.)

Incorporated April 15, 1918. - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Honourable Charles Murphy, Stanley Gardner Metcalfe, and Stanley Metcalfe Clark, barristers-at-law; Linda Bonell and Gladys Robertson, stenographers, all of Ottawa, Ont.

First or Provisional Directors.—Honourable Charles Murphy, Stanley Gardner Metcalfe and Stanley Metcalfe Clark.

Chief place of Business.—Ottawa, Ont.

Objects of the Company.—*Vide* p. 3682, *Canada Gazette,* 1917-18.

"JOLIETTE TOBACCO COMPANY, LIMITED."

Incorporated April 15, 1918. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Joseph Lippé, bank manager; Joseph Alexandre Guibault, advocate; Joseph Dufresne and Joseph Alphonse Généreux, manufacturers; and Joseph Conrad Perrault, insurance agent, all of Joliette, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Joliette, Que.

Objects of the Company.—*Vide* p. 3730, *Canada Gazette,* 1917-18.

Supplementary Letters Patent issued April 16, 1918, to

"PLACEMENT FONCIER, LIMITÉE."

Changing the corporate name of the said company to that of

"CHALIFOUX, DIGNARD, LIMITÉE."

Vide p. 3730, *Canada Gazette,* 1918.

"THE MANITOBA BRIDGE AND IRON WORKS, LIMITED."

Incorporated April 16, 1918. - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Thomas Russ Deacon, president and general manager of the Manitoba Bridge and Iron Works, Limited; Hugh Buxton Lyall, secretary-treasurer and assistant manager of the Manitoba Bridge and Iron Works, Limited; Robert Dunbar Guy and Charles Whitfield Chappell, barristers-at-law; and Herbert Adamson, student-at-law; all of Winnipeg, Man.
First or Provisional Directors.—Thomas Russ Deacon, Hugh Buxton Lyall, and Robert Dunbar Guy.
Chief place of Business.—Winnipeg, Man.
Objects of the Company.—*Vide* p. 3686, *Canada Gazette*, 1917-18.

"THE INTERPROVINCIAL MANUFACTURING COMPANY, LIMITED."

Incorporated, April 16, 1918. - - - - - - - Amount of capital stock, $200,000 Number of shares, 4,000.—Amount of each share, $50.

Corporate Members.—Edouard Fabre Surveyer, King's Counsel; William Langley Bond, King's Counsel; Elizabeth May Silver, and Jeanne Laflamme, stenographers; and John Bicknell Johnson; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 3688, *Canada Gazette*, 1917-18.

"CANADIAN TOYS, LIMITED."

Incorporated, April 16, 1918. - - - - - - - Amount of capital stock, $100,000 Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Cecil Vanroy Langs, and Ewart Gladstone Binkley, barristers-at-law; Nellie Moore, book-keeper; Lily Helen Gray, Mary Tydd, and Edna Marguerite Green, stenographers, all of Hamilton, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Hamilton, Ont.
Objects of the Company.—*Vide* p. 3774, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued April 16, 1918, to

"THE BLASHILL WIRE MACHINERY COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $48,000 to the sum of $100,000, being an addition of 520 shares of $100 each to the present capital stock.

Vide p. 3772, *Canada Gazette*, 1918.

"CANADA-ORIENTAL TRADING COMPANY, LIMITED."

Incorporated April 17, 1918. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Honoré Blouin, manager; Victor Geoffrion, King's Counsel; Joseph Alexandre Prud'homme, advocate; and Gilles Dansereau, clerk; all four of Montreal, Que.; Philip Fornaci, exporter, of Philadelphia, Penn., U.S.A.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 3777, *Canada Gazette*, 1917-18.

"DODD HEATING SYSTEMS, LIMITED."

Incorporated April 17, 1918. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—John O'Neill, the younger, manufacturer, Henry Stansfield Dodd, inventor, James Joseph O'Neill, esquire, Anthony L'Estrange Malone, solicitor, and John Sheedy, manufacturer, all of Toronto, Ont.

First or Provisional Directors.—John O'Neill, Jr., Henry Stansfield Dodd and Anthony L'Estrange Malone.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 3778, *Canada Gazette*, 1917-18.

"THE HURLBUT COMPANY, LIMITED."

Incorporated April 17, 1918. - - - - - - - - Amount of capital stock, $150,000. Number of shares, 1,500.—Amount of each share, $10.

Corporate Members.—Clayton Elwood Hurlbut, George Purcel Hurlbut, Clinton Alexander Hurlbut and Allen Melville Hurlbut, esquires, and Helen Eva Hurlbut, spinster, all of Preston, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Preston, Ont.

Objects of the Company.—*Vide* p. 3773, *Canada Gazette*, 1917-18.

"QUALITY DRESS AND WAIST COMPANY, LIMITED."

Incorporated April 17, 1918. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Samuel Medine, manufacturer; Charles Abraham Kaplan, superintendent; Louis Shlakman, manager; Henry Keene Symonds Hemming, accountant; and Rose Medine, wife of Samuel Medine; all of Montreal, Que.

First or Provisional Directors.—Samuel Medine, Charles Abraham Kaplan and Louis Shlakman.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 3686, *Canada Gazette*, 1917-18.

"THE PERFECT SHOE COMPANY, LIMITED."

Incorporated April 18, 1918 - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Narcisse Philemon Gosselin, Zéphirin Gravel, shoemakers, Delphine Couture, dressmaker, Joseph Alexandre Leo Leclair, manufacturer, and Louis Dupuy, trader, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 3943, *Canada Gazette*, 1917-18.

"CANADIAN GRATON & KNIGHT, LIMITED."

(As a private company.)

Incorporated April 18, 1918. - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Rupert Henry Jackson, manager; Ella Jackson, stenographer; Lily Copping, clerk; François Philippe Brais, advocate; and Jules Bruneau, student-at-law; all of Montreal, Que.

First or Provisional Directors.—Rupert Henry Jackson, François Philippe Brais and Jules Bruneau.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 3772, *Canada Gazette*, 1917-18.

"SMITH & TRAVERS COMPANY, LIMITED."

Incorporated April 19, 1918. - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Thomas Erasmus Smith and Thomas Travers, diamond-drill operators; Clarence Horace Hitchcock, geologist; George Joseph Valin, barrister; and Arthur James Manley, stenographer, all of Sudbury, Ont.
First or Provisional Directors.—The said corporate members.
Chief Place of Business.—Sudbury, Ont.
Objects of the Company.—*Vide* p. 3775, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued April 20, 1918, to

"J. F. HOWELL COMPANY, LIMITED."

Changing the corporate name of the said company to that of

"W. A. MILLIGAN & CO., LIMITED."

Vide p. 3772, *Canada Gazette*, 1918.

"BEAVER STAMPING COMPANY, LIMITED."

(As a private company.)

Incorporated April 20, 1918. - - - - Amount of capital stock, $40,000. Number of shares, 400.—Amount of each share, $100.

Corporate Members.—Robert Townsend Herdegen, Pearson Wells, Bernhard Frederick Kiesel and Harold Otto Kolbe, manufacturers, and Bertha Kiesel, married woman, all of Detroit, Mich., U.S.A.
First or Provisional Directors.—Robert Townsend Herdegen, Pearson Wells and Bernhard Frederick Kiesel.
Chief place of Business.—Walkerville, Ont.
Objects of the Company.—*Vide* p. 3776, *Canada Gazette*, 1917-18.

"CANADIAN LABOUR PRESS, LIMITED."

Incorporated, April 24, 1918. - - - - - - Amount of capital stock, $100,000. Number of shares, 10,000.—Amount of each share, $10.

Corporate Members.—Wilbert Thomas Pearce and Harold George McKibbon, druggists; George Howard Gray, barrister; Lena Adams, book-keeper, and Carroll Frederick Smythe, artist; all of Toronto, Ont.
First of Provisional Directors.—The said corporate members.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 3861, *Canada Gazette*, 1917-18.

"FALCONBRIDGE MINES, LIMITED."

Incorporated April 24, 1918. - - - - - - - Amount of capital stock, $10,000. Number of shares, 2,000.—Amount of each share, no nominal or par value.

Corporate Members.—Gideon Grant, Mervil Macdonald, Edwin Smily, and Bruce Williams, barristers-at-law; and Bertha Rice, stenographer; all of Toronto, Ont.
First of Provisional Directors.—The said corporate members.
Chief place of Business.—Falconbridge, Ont.
Objects of the Company.—*Vide* p. 3867, *Canada Gazette,* 1917-18.

Supplementary Letters Patent issued April 24, 1918, to

"THE DOBELL COAL COMPANY OF TOFIELD, LIMITED."

Changing the corporate name of the said company to that of

"THE DOBELL COAL COMPANY, LIMITED."

Vide p. 3860, *Canada Gazette,* 1917-18.

"MIAMI NAVIGATION COMPANY, LIMITED."

Incorporated April 24, 1918. - - - - - - - Amount of capital stock, $10,000. Number of shares, 100.—Amount of each share, $100.

Corporate Members.—Timothy Donovan, farmer; Francis Charles Granville, and Thomas Jefferson Stockwell, master mariners; James Wilfred Harrington, auctioneer, and Thomas Munn King, engineer; all of Chatham, Ont.
First or Provisional Directors.—Timothy Donovan, Francis Charles Granville and Thomas Jefferson Stockwell.
Chief place of Business.—Chatham, Ont.
Objects of the Company.—*Vide* p. 3866, *Canada Gazette,* 1917-18

"THE J. M. GREENE MUSIC COMPANY, LIMITED."

Incorporated, April 25, 1918 - - - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—George Newcombe Gordon and Joseph Aloysius O'Brien, barristers-at-law; Maud Leahy, Jessie Stevens and Mary Eason, stenographers, all of Peterborough, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Peterborough, Ont.
Objects of the Company.—*Vide* p. 3866, *Canada Gazette*..

Supplementary Letters Patent issued April 25, 1918, to

"LOUIS K. LIGGETT COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $300,000 to the sum of $5,300,000, being an addition of 50,000 shares of $100 each to the present capital stock.

Vide p. 3860, *Canada Gazette,* 1918.

"SOLDIERS SERVICE CLUB."

(Association.)

Incorporated, April 25, 1918. - - - - - - - - - - - Without share capital

Corporate Members.—Florence Westman, Martha Robertson, Martha Campbell, Jean Powers and Sara J. Odell, married women, all of Ottawa, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Ottawa, Ont.

Objects of the Company.—*Vide* p. 3868, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued April 25, 1918, to

"UNITED DRUG COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $950,000 to the sum of $1,500,000, being an addition of 11,500 shares of $100 each to the present capital stock.

Vide p. 3941, *Canada Gazette*, 1918.

"DOUGLAS, MILLIGAN COMPANY, LIMITED."

Incorporated April 26, 1918 - - - - - - - - Amount of capital stock, $150,000. Number of shares, 1,500—Amount of each share, $100.

Corporate Members.—Louis Athanase David, and Louis Philippe Crepeau, both of His Majesty's counsel learned-in-the-law; Sigfried Hinson Read Bush, advocate; George Whittaker, accountant; and John Parker Callaghan, student-at-law; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 3863, *Canada Gazette*, 1917-18.

"CONSOLIDATED WHALING CORPORATION, LIMITED."

Incorporated April 26, 1918 - - - - - - - Amount of capital stock, $2,500,000. Number of shares, 25,000—Amount of each share, $100.

Corporate Members.—David Blythe Hanna, railway official; Alfred James Mitchell, comptroller; Robert George Osborne Thomson, accountant; George Robinson Donovan, insurance broker; Reginald Herbert Montague Temple, barrister-at-law; George Norman Limpricht, draughtsman; and William Bowler, secretary; all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 3861, *Canada Gazette*, 1917-18.

"GRACE MOTORS, LIMITED."

Incorporated April 26, 1918 - - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000—Amount of each share, $100.

Corporate Members.—Richard Tuson Heneker, and Henry Noel Chauvin, both of His Majesty's Counsel learned in the law; Hugh Wylie, accountant; and Inez Lillian MacCallum, stenographer; all of Montreal, Que.; and Christina Imrie, of Westmount, Que., clerk.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 3862, *Canada Gazette*, 1917-18.

"KHAKI LEAGUE."

(Association.)

Incorporated April 26, 1918 - - - - - - - - - - - - Without share capital.

Corporate Members.—George Frederick Benson, merchant; Albert Edward Ogilvie, gentleman; Albert Edmond Holt, manager; Richard Tuson Heneker, King's Counsel, and Austin Crawford Stead, accountant; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 3868, *Canada Gazette.*

"CANADIAN WAR CONTINGENT ASSOCIATION, DOMINION BRANCH."

(Association.)

Incorporated April 26, 1918. - - - - - - - - - - - - Without share capital.
Corporate Members.—Albert Edward Gooderham, Esquire, Noel George Lambert Marshall, merchant, Adelaide Plumptre, Helen Bruce and Mary Gooderham, married women, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of Company.—*Vide* p. 3941, Canada Gazette, 1917-18.

Supplementary Letters Patent issued April 29, 1918, to

"COLONIAL GLOVE COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $20,000 to the sum of $150,000 being an addition of 1,300 shares of $100 each to the present capital stock.

Vide, p. 3860, *Canada Gazette*, 1918.

"McKEOWN'S, LIMITED."

Incorporated April 29, 1918. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Louis Athanase David, and Louis Philippe Crépeau both of His Majesty's Counsel learned-in-the-law; Segfried Hinson Read Bush, advocate, George Whittaker, accountant; and John Parker Callaghan, student-at-law, all of Montreal, Que.
First or Provisional Directors.—Athanase David, Louis Philippe Crépeau, and Segfried Hinson Read Bush.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 3864, *Canada Gazette*, 1917-18.

"O. W. MEISSNER, LIMITED."

Incorporated April 29, 1918. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Howard Salter Ross, and Eugène Réal Angers, advocates, Henry Murray Gardner, chartered accountant; Arthur Claydon, accountant; and John Lister, book-keeper, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 3865, *Canada Gazette*, 1917-18.

"T. J. COYLE COMPANY, LIMITED."

Incorporated April 29, 1918. - - - - - - - - Amount of Capital Stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Thomas Joseph Coyle, and John Douglas Cameron, produce brokers, Esther Catherine Coyle and Marjory McCallum Cameron, married women, and Sarah Penston, stenographer, all of Winnipeg, Man.

First or Provisional Directors.—Thomas Joseph Coyle, Esther Catherine Coyle and Sarah Penston.

Chief Place of Business.—Winnipeg, Man.

Objects of the Company.—*Vide* p. 3865, *Canada Gazette,* 1917-18.

Supplementary Letters Patent issued April 29, 1918, to

"CENTRAL ENGINEERING COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $25,000 to the sum of $100,000, being an addition of 750 shares of $100 each to the present capital stock.

Vide p. 3860, *Canada Gazette,* 1918.

"STANDARD ELECTRIC & ACETYLENE WELDING COMPANY, LIMITED."

Incorporated April 29, 1918. - - - - - - - - Amount of capital stock, $10,000. Number of shares, 100.—Amount of each share, $100.

Corporate Members.—Richard Tuson Heneker, and Henry Noel Chauvin, both of His Majesty's counsel learned-in-the-law; Hugh Wylie, accountant, and Inez Lillian MacCallum, stenographer, all of Montreal, Que., and Christina Imrie, of Westmount, Que., clerk.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 3947, *Canada Gazette,* 1917-18.

Supplementary Letters Patent issued April 29, 1918, to

"VALENTINE & GUILBAULT, LIMITEE,"

Changing the corporate name of the said company to that of

"HENRY VALENTINE, LIMITED."

Vide p. 3903.—*Canada Gazette,* 1918.

"PREST-O-LITE COMPANY OF CANADA, LIMITED."

Incorporated April 30, 1918. - - - - - - - Amount of capital stock, $800,000.

Number of shares, 20,000.—Amount of each share, without nominal or par value.

Corporate Members.—Howard Armour Harrison and Wilfred Maynard Cox, barristers-at-law; Robert Everett Laidlaw, and William Nelson Robertson, students-at-law; and John Frederick Van Lane, accountant, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto; Ont.

Objects of the Company.—*Vide* p. 3944, *Canada Gazette,* 1917-18.

"HOLMES FOUNDRY CO., LIMITED."

Incorporated April 30, 1918. - - - - - - - Amount of capital stock, $500.000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Lyman Abel Holmes, senator; Louis Garrett Blunt, manufacturer; William Frederick Hooper, assistant manager, and Cecil Clay Peck, banker, all of Port Huron, Mich, U.S.A.; and Anthony Ignatius McKinley, of Sarnia, Ont., barrister.

First or Provisional Directors.—Lyman Abel Holmes, Louis Garrett Blunt and Cecil Clay Peck.

Chief place of Business.—Sarnia, Ont.

Objects of the Company.—*Vide* p. 3948, *Canada Gazette*, 1917-18.

"W. R. VYE, LIMITED."

Incorporated April 30, 1918. - - - - - - - - Amount of capital stock, $40,000. Number of shares, 4,000.—Amount of each share, $10.

Corporate Members.—William Raymond Vye, merchant; Reginald William Eyre and John Alexander McInnes, barristers; Charles Dimmick Bertram, salesman; and Mary Tracy, stenographer, all of Vancouver, B.C.

First or Provisional Directors.—William Raymond Vye, Reginald William Eyre and Charles Dimmick Bertram.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 3864, *Canada Gazette*, 1917-18.

"PETROLEUM AND GAS PRODUCTS, LIMITED."

Incorporated, May 1, 1918. - - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—George Joseph Valin, barrister; Fred Woods, and Fred Wilson Rogers, accountants; Mary Veronica Curley, and Arthur James Manley, stenographers, all of Sudbury, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 4056, *Canada Gazette*, 1917-18.

"THE NATIONAL COUNCIL OF YOUNG MEN'S CHRISTIAN ASSOCIATIONS OF CANADA."

(Association.)

Incorporated May 1, 1918. - - - - - - - - - - - - - Without share capital.

Corporate Members.—George Herbert Wood, bond dealer, Thomas Bradshaw, finance commissioner, John James Gartshore, Frederick Leslie Ratcliff, and Louis Forde Monypenny, merchants, Frederick Herbert Deacon, broker, and Russell Gordon Dingman, publisher, all of Toronto, Ont.; Jose Antonio Machado, manufacturer, of Ottawa, Ont.; John Joseph Greene, manufacturer, of Hamilton, Ont.; William Massey Birks, merchant, and John Wardrop Ross, accountant, of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 3941, *Canada Gazette*, 1917-18.

"WEBSTER MOTORS, LIMITED."

Incorporated May 1, 1918. - - - - - - - Amount of capital stock, $75,000. Number of shares, 750.—Amount of each share, $100.

Corporate Members.—William Robert Webster, manufacturer, Orrin Ralph Webster, and Robert Aberdeen Webster, automobile dealers, Harry Redfern Fraser, King's Counsel, and Frederick Samuel Rugg, advocate, all of Sherbrooke, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Sherbrooke, Que.
Objects of the Company.—*Vide* p. 3942, *Canada Gazette*, 1917-18.

"ZIMMERMAN MANUFACTURING COMPANY, LIMITED."

Incorporated May 1, 1918 - - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Edward Herbert Ambrose, Henry Arnold Burbidge, John Roy Marshall, and Arthur Burgess Turner, barristers-at-law, and George Alexander Young, solicitor's clerk, all of Hamilton, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Hamilton, Ont.
Objects of the Company.—*Vide* p. 3945, *Canada Gazette*, 1917-18.

"BOWMAN-THAYER UNITED, LIMITED."

Incorporated May 1, 1918. - - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John Hamilton Parkhill, manager, John Fraser Erb, and Josephine Sommerville, accountants, Clare Cox Weston and Flora Mellish, stenographers, all of Winnipeg, Man.
First or Provisional Directors.—John Hamilton Parkhill, John Fraser Erb, and Josephine Sommerville.
Chief place of Business.—Winnipeg, Man.
Objects of the Company.—*Vide* p. 3948, *Canada Gazette*, 1917-18.

"DILLON CRUCIBLE ALLOYS, LIMITED."

Incorporated May 2, 1918. - - - - - - - Amount of capital stock, $110,000.

Number of shares, 1,000 preferred stock; 2,000 common stock, without nominal or par value.

Corporate Members.—Lynn Bristol Spencer and Lorenzo Clarke Raymond, barristers; Charles Henderson, retired farmer; Clarence Milton Webber, bookkeeper; and William Wesley Brookfield, road superintendent; all of Welland, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Welland, Ont.
Objects of the Company.—*Vide* p. 4057, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued May 3, 1918, to

"MASSEY-HARRIS COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $15,000,000 to the sum of $25,000,000, being an addition of 100,000 shares of $100 each to the present capital stock.

Vide p. 4048, *Canada Gazette*, 1918.

"FABRICS, LIMITED."

Incorporated May 3, 1918. - - - - - - - - Amount of capital stock, $40,000. Number of shares, 400.—Amount of each share, $100.

Corporate Members.—Walter Robert Lorimer Shanks, advocate; Francis George Bush, bookkeeper; George Robert Drennan, stenographer; Michael Joseph O'Brien and Herbert William Jackson, clerks; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 3941, *Canada Gazette*, 1917-18.

"PERFECTION MANUFACTURING COMPANY, LIMITED."

Incorporated May 3, 1918. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Edgar Rodolphe Eugéne Chevrier and Paul Leduc, barristers-at-law; Rebecca Mary Bobier, stenographer; and Jessie Boyes, book-keeper; of Ottawa, Ont.; and Walter James Burns, of Hull, Que., student-at-law.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 3944, *Canada Gazette*, 1917-18.

"THE CENTRAL COUNCIL OF THE GIRLS' FRIENDLY SOCIETY IN CANADA."

(Association.)

Incorporated May 3, 1918. - - - - - - - - - - - - - - Without share capital.

Corporate Members.—Edith Winnett, wife of Frederick Winett, Doctor of Medicine, Grace Telfer Arnoldi, Adele Boulton Nordheimer, and Ethel Maude Campbell, spinsters, and Bessy Victoria Thomas Wood, widow, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 3946, *Canada Gazette*, 1917-18.

"ATLEE RANCHING COMPANY, LIMITED."

Incorporated May 6, 1918. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Clare Montrose Wright, barrister, May Caldwell, Jessie Jean Emerson and Christina Agnes Switzer, stenographers, and William David Spence, accountant, all of Calgary, Alta.

First or Provisional Directors.—Clare Montrose Wright, May Caldwell and Jessie Jean Emerson.

Chief place of Business.—Atlee, Alta.

Objects of the Company.—*Vide* p. 4226, *Canada Gazette*, 1917-18.

"SWAN LAKE FARM, LIMITED."

Incorporated May 6, 1918. - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—John Fletcher Gundy, Henry Wentworth Gundy and Garnet Sumner Bell, real estate brokers, Robert Percy Rickaby, bookkeeper, all of Toronto, Ont., and William Eveleigh Gundy, of Windsor, Ont., barrister-at-law.

First or Provisional Directors.—The said corporate members.

Chief place of Busines.—Toronto, Ont.

Objects of the Company.—*Vide* p. 4049, *Canada Gazette*, 1917-18.

"THE FLAXLINUM SALES COMPANY, LIMITED."

Incorporated May 7, 1918. - - - - - - Amount of capital stock, $25,000. Number of shares, 1,000.—Amount of each share, $25.

Corporate Members.—James Douglas Armstrong, and Albert Preston Hendrickson, bankers, Frank Evans, merchant, all of St. Paul, Minn., U.S.A., Clarence Chester Martin, merchant, and Robert Fair, accountant, both of Minneapolis, Minn., U.S.A.

First or Provisional Directors.—James Douglas Armstrong, Clarence Chester Martin and Robert Fair.

Chief place of Business.—Winnipeg, Man.

Objects of the Company.—*Vide* p. 4049, *Canada Gazette*, 1917-1918.

"ROBINSON-ALAMO, LIMITED."

Incorporated May 8, 1918. - - - - - Amount of capital stock, $30,000. Number of shares, 300.—Amount of each share, $100.

Corporate Members.—Howard Salter Ross and Eugene Réal Angers, advocates; Henry Murray Gardner, chartered accountant, Arthur Claydon, accountant, and John Lister, book-keeper, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Winnipeg, Man.

Objects of the Company.—*Vide* p. 4058, *Canada Gazette*, 1917-18.

"FAIRFAX FORGINGS, LIMITED."

Incorporated May 8, 1918. - - - - - Amount of capital stock, $1,500,000. Number of shares, 15,000.—Amount of each share, $100.

Corporate Members.—Louis Athanase David and Louis Philippe Crépeau, both of His Majesty's Council learned-in-law; Segfried Hinson Read Bush, advocate; George Whittaker, accountant, and John Parker Callaghan, student-at-law, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 4050, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued May 10, 1918, to

"JENKINS BROS., LIMITED."

Increasing the capital stock of the said company from the sum of $200,000 to the sum of $400,000, being an addition of 2,000 shares of $100 each to the present capital stock, and extending the powers.

Vide p. 4048, *Canada Gazette*, 1918.

"FRANK WATERHOUSE AND COMPANY OF CANADA, LIMITED."

(As a private company.)

Incorporated May 10, 1918. - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Frank Waterhouse, Neal Harold Begley, and John Richard Lane, steamship brokers, of Seattle, Washington, U.S.A.; David Gordon Marshall, barrister, and John Speer, solicitor's managing clerk, of Vancouver, B.C.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Vancouver, B.C.

Objects of the Company.—*Vide* p. 4054, *Canada Gazette*, 1917-18.

"OPPENHEIMER CASING CO., OF CANADA, LIMITED."

Incorporated May 10, 1918. - - - - - - - - Amount of capital stock, $5,000. Number of shares, 50.—Amount of each share, $100.

Corporate Members.—Arthur Lorne Reid, solicitor; Kenneth Duncan Mackenzie, student-at-law; William Walter Perry, secretary; Archibald MacLean Borthwick, and Charles Herbert Croft Leggott, accountants; all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 4051,Canadian Gazette, 1917-18.

"SAXON MOTORS CORPORATION OF CANADA, LIMITED."

Incorporated May 10, 1918. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 5,000.—Amount of each share, $10.

Corporate Members.—Alexander Robert Bartlett, Harvey Leroy Barnes, Ralph McLean, barristers-at-law; Andrew Braid, accountant; and Nettie Mae O'Neill, stenographer; all of Windsor, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Windsor, Ont.
Objects of the Company.—*Vide* p. 4053, *Canada Gazette*, 1917-18.

"ALFRED & COMPANY, LIMITED."

Incorporated May 11, 1918. - - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—John Edward Aldred, broker; and Henry Jones Fuller, manufacturer; both of New York, N.Y., U.S.A.; Howard Murray, manager; and Gordon Walters MacDougall and Lawrence Macfarlane, both of His Majesty's Counsel learned in the law; all three of Montreal, Que.
First or Provisional Directors.—Howard Murray, Gordon Walters MacDougall and Lawrence Macfarlane.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 4054, *Canada Gazette*, 1917-18.

"SUNBEAM CHEMICAL COMPANY OF CANADA, LIMITED."

Incorporated May 13, 1918. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—George Harold Gilday, barrister-at-law; Martha Pearl Procter, Loretta Flynn and Mabel Scheurer, stenographers, and Robert Lord Webster, student-at-law; all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 4052, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued May 14, 1918, to

"COPELAND-CHATTERSON-CRAIN, LIMITED,"

Changing the corporate name of the said company to that of

"COPELAND-CHATTERSON, LIMITED."

Vide p. 4137, *Canada Gazette*, 1918.

"SUGAR SALES CORPORATION OF CANADA, LIMITED."

Incorporated May 14, 1918 - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000—Amount of each share, $100

Corporate Members.—Walter Robert Lorimer Shanks, advocate; Francis George Bush, book-keeper; George Robert Drennan, stenographer; Michael John O'Brien, and Herbert William Jackson, clerks; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 4138, *Canada Gazette,* 1917-18.

"STATESMAN PUBLISHING COMPANY, LIMITED."

Incorporated May 14, 1918 - - - - - - - - - Amount of capital stock, $40,000. Number of shares, 800—Amount of each share, $50.

Corporate Members.—Charles Joseph McLaughlin, student-at-law; Ella Edith Purvis, book-keeper; Gladys Louise Lee, Irene Hickey, and Aileen Jamison, stenographers; all of Toronto, Ont.
First or Provisional Directors.—Charles Joseph McLaughlin, Ella Edith Purvis, and Gladys Louise Lee.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 4232, *Canada Gazette,* 1917-18.

"CANADIAN BUTTONS, LIMITED."

Incorporated May 14, 1918 - - - - - - - - - Amount of capital stock, $25,000. Number of shares, 250—Amount of each share, $100.

Corporate Members.—Maxwell Goldstein, of Westmount, Que., King's Counsel; John Albert Engel, and Max Bernfeld, advocates; Adolph Gardner, student-at-law; and James Burnett Taylor, accountant; all of Montreal, Que.
First of Provisional Directors.—Maxwell Goldstein, John Albert Engel, and James Burnett Taylor.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 4058, *Canada Gazette,* 1917-18.

"MILE END MILLING CO., LIMITED."

Incorporated May 15, 1918. - - - - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Elzebert Turgeon and Eddy Turgeon, brokers; Joseph Sifroi Dumont, trader; Félix Dumont, miller; all of Montreal, Que., and Delphis Rochon, of Quebec, Que., manager.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 4139, Canada Gazette, 1917-18.

"ALLIED SECURITIES, LIMITED."

Incorporated May 15, 1918. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—William Thomas Maddaford, and Tyrus Dmytro Ferley, grain merchants; Alexander William Lewis, real estate agent; and William Thorburn, barrister-at-law; all of Winnipeg, Man.; and Harry Maddaford, gentleman, of Victoria, B.C.

First or Provisional Directors.—William Thomas Maddaford, Tyrus Dmytro Ferley, and Alexander William Lewis.
Chief place of Business.—Winnipeg, Man.
Objects of the Company.—*Vide* p. 4137, *Canada Gazette*, 1917-18.

"SELECT PICTURES CORPORATION, LIMITED."

Incorporated May 16, 1918. - - - - - - - - - Amount of capital stock, $50,000 Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Joseph Max Bullen, and Norman Stuart Robertson, barristers-at-law; Wendell Osborne, student-at-law; Agnes Porter Traill, accountant, and Lena Duff, stenographer, all of Toronto, Ont.
First or Provisional Directors.—Joseph Max Bullen, Norman Stuart Robertson and Wendell Osborne.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 4138, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued May 17, 1918, to

"THE BEAVER COMPANY, LIMITED"

Amending Supplementary Letters Patent of February 3, 1915.—*Vide* p. 4137, *Canada Gazette*, 1918.

"A. V. FIOLA & COMPANY, LIMITED."

Incorporated May 17, 1918. - - - - - - - - - Amount of capital stock, $15,000. Number of shares, 450.—Amount of each share, $100.

Corporate Members.—Cleophas Laurin, manager, Louis Philippe Napoleon Fiola, Wilbert Célestin Fiola and Eugene Laurin, clerks, and Aimé Victor Fiola, merchant, all of Verdun, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Verdun, Que.
Objects of the Company.—*Vide* p. 4223, *Canada Gazette*, 1917-18.

"BRANHAM DREDGING COMPANY, LIMITED."

Incorporated May 17, 1918. - - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—William Wilfred Wadleigh, gentleman; Alexander Cameron Galbraith, contractor; and Charles Sanders, broker, all of Edmonton, Alta.; Earl A. Grant, and Gilbert Bennett Moir, brokers; William Appleby Moore, Robert Ellesworth Moore, William Buxton, Edward Schafer, John Brear Turner, Gilbert Elling Lundy and Eugene James McDermont, farmers; and Hugh Grey Murray, merchant, all of Barons, Alta.; George Spence Ferris, broker; and Charles George Beeching, rancher; both of Nanton, Alta.; Thomas Ralph Jopling, farmer; Arthur William Jopling and Nyle Milton St. Peter, merchants; and Percy Watson, broker; all of Champion, Alta.; William Charles Heward, Rex Luchie, Thomas Muir and Ernest Luchie, farmers; all of Granum, Alta.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Calgary, Alta.
Objects of the Company.—*Vide* p. 4227, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued May 20, 1918, to

"PEERLESS HOSIERY, LIMITED."

Changing the corporate name of the said company to that of

"LONDON HOSIERY MILLS, LIMITED."

Vide p. 4222, *Canada Gazette*, 1918.

"CLUETT, PEABODY & CO., OF CANADA, LIMITED."

Incorporated May 21, 1918. - - - - - - - - Amount of capital stock, $1,500,000. Number of shares, 15,000.—Amount of each share, $100.

Corporate Members.—Henry Johnston Elliott, advocate and King's Counsel, Frederick William Stewart, manager, Louis Athanase David, advocate and King's Counsel; Louis Philippe Crepeau, advocate and King's Counsel, Segfried Hinson Read Bush, advocate, Norval Dickson, notary, George Whittaker, accountant; and John Parker Callaghan, student-at-law, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—Vide p. 4222, *Canada Gazettte*, 1917-18.

"BRANTFORD SALES, LIMITED."

Incorporated May 21, 1918. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Gilbert Brereton, manufacturer; William Thomas Henderson, barrister-at-law, and Charles Herbert Brown, merchant, all three of Brantford, Ont.; William Joseph Carroll and Thomas Stevenson, merchants, and Mary Hester Carroll, accountant, all three of Hamilton, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Brantford, Ont.
Objects of the Company.—Vide p. 4224, *Canada Gazette*, 1917-18.

"BESSETT & ASHBY, LIMITED."

Incorporated May 21, 1918. - - - - - - - - - Amount of capital stock, $10,000. Number of shares, 200.—Amount of each share, $50.

Corporate Members.—Frank Callaghan, and Francois-Xavier Biron, advocates; Alfred Tracey, accountant, and Jane Irvine Gamble, and Ethel May Pierce, stenographers, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—Vide p. 4229, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued May 21, 1918, to

"AGREEMENTS FOR SALE AND DEBENTURE COMPANY OF CANADA, LIMITED."

(1) Increasing the capital stock of the said company from the sum of $100,000 to the sum of $500,000, being an addition of 4,000 shares of $100 each to the present capital stock, (2) extending the powers and (3) changing the corporate name of the said company to that of

"THE DEBENTURE COMPANY OF CANADA, LIMITED."

Vide p. 4222.—*Canada Gazette*, 1918.

SESSIONAL PAPER No. 29

"CANADA PLASTER BOARD COMPANY, LIMITED."

Incorporated, May 21, 1918 - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Frederick Chalcraft, and William Edward Long, manufacturers, Susan Adelaide Chalcraft and Anna Florence Long, married women, of Brantford, Ont., and Robert Edwin Haire, of Paris, Ont., manufacturer.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Brantford, Ont.

Objects of the Company.—*Vide* p. 4225, *Canada Gazette*, 1917-18.

"ADANAC COLLIERIES, LIMITED."

Incorporated, May 22, 1918. - - - - - - - - Amount of capital stock, $1,250,000. Number of shares, 12,500.—Amount of each share, $100.

Corporate Members.—Thomas Ernest Meredith, clerk, Charles Stubbs Brown, Alexander James Milligan and Horatio Wallace, solicitors, William Arthur Deacon, student-at-law, and Matthew Robinson Elden, law clerk, all of Winnipeg, Man.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Winnipeg, Man.

Objects of the Company.—*Vide* p. 4233, *Canada Gazette*, 1917-18.

"UNITED GRAIN GROWERS' SECURITIES COMPANY, LIMITED."

(As a private company.)

Incorporated, May 22, 1918 - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Cecil Rice-Jones, Robert Andrew Parker, Chester Milton Elliott, Alexander Van Rensselaer Schermerhorn and John Henry Turnbull, managers, all of Calgary, Alta.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Calgary, Alta.

Objects of the Company.—*Vide* p. 4231, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued May 22, 1918, to

"HODGSON, SUMNER, & CO., LIMITED."

(1) Decreasing the capital stock of the said company from the sum of $1,000,000 to the sum of $950,000, such decreased capital stock to consist of 9,500 shares of $100 each.

(2) Increasing the capital stock of the said company from the sum of $950,000 to the sum of $1,500,000, being an addition of 5,500 shares of $100 each to the present capital stock.

Vide p. 4222, *Canada Gazette*, 1918.

"RYAN'S DRY CLEANING WORKS, LIMITED."

Incorporated, May 22, 1918. - - - - - - - Amount of capital stock, $25,000. Number of shares, 250.—Amount of each share, $100.

Corporate Members.—Isidore Popliger, advocate; Samuel Ryan, Hyman Sabloff and Sam Myers, merchants; and William Astroff, agent; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 4230, *Canada Gazette*, 1917-18.

"THE CHRISTIAN MEN'S FEDERATION OF CANADA."

(Association.)

Incorporated May 22, 1918. - - - - - - - - - - - - Without share capital.

Corporate Members.—John G. Shearer, superintendent; Herbert Watson Ausman, millinery buyer; Walter McIntosh Murdock, clerk; Arthur Frederick MacKenzie and Thomas Howell, secretaries; and William Black Creighton, editor; all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 4231, *Canada Gazette*, 1917-18.

"LANSDOWNE PARK COMPANY, LIMITED."

Incorporated, May 22, 1918. - - - - - - - Amount of capital stock, $250,000. Number of shares, 2,500.—Amount of each share, $100.

Corporate Members.—Willoughby Staples Brewster, barrister-at-law; William Platt Kellett, manufacturer; Mae Forestelle McGaw, stenographer; Wilbur Kintrea Thomson, accountant; and William Dominion Powell, engineer; all of Brantford, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Brantford, Ont.

Objects of the Company.—*Vide* p. 4229, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued May 22, 1918, to

"THE PETROLIA LAND AND INVESTMENT COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $300,000 to the sum of $350,000, being an addition of 500 shares of $100 each to the present capital stock.

Vide p. 4222, *Canada Gazette*, 1917-18.

"HALIFAX SHIPYARDS, LIMITED."

Incorporated, May 23, 1918. - - - - - - - Amount of capital stock, $6,000,000. Number of shares, 60,000.—Amount of each share, $100.

Corporate Member.—Honourable Clive Pringle, and Norman Gregor Guthrie, barristers; Ruby Blake, clerk; William Ernest Moore and William Samuel McCauley, accounts; all of Ottawa, Ont.

First or Provisional Directors.—Honourable Clive Pringle, Norman Gregor Guthrie and Ruby Blake.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 4314, *Canada Gazette*, 1917-18.

(Cancelled.)

"UNION ENGINE AND MACHINE WORKS, LIMITED."

Incorporated, May 23, 1918. - - - - - - - Amount of capital stock, $150,000. Number of shares, 15,000.—Amount of each share, $10.

Corporate Members.—George Brinmacombe Jones, merchant; Griffith Lloyd Williams, and Janet Burge, clerks; Joseph Peter Kenny, broker; and Albert Laurie, engineer; all of Montreal, Que.

First or Provisional Directors.—George Brinmacombe Jones, Griffith Lloyd Williams, and Albert Laurie.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 4230, *Canada Gazette*, 1917-18.

"MIDLAND IRON AND STEEL COMPANY, LIMITED."

Incorporated, May 25, 1918. - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—David Shear Pratt, and Douglas Leland White, manufacturers; John Walter Benson, Milton Edward Tully and Thomas Constable Luke, accountants; Marcus Smith, barrister, and David Hartley Clark, lumberman; all of Midland, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Midland, Ont.

Objects of the Company.—*Vide* p. 4316, *Canada Gazette*, 1917-18.

"BIRD AND SON, LIMITED."

Incorporated, May 25, 1918. - - - - - - - Amount of capital stock, $750,000.

Of which $250,000 shall be first cumulative preference stock divided into 2,500 shares of $100 each, $400,000 shall be second preference stock divided into 4,000 shares of $100 each and of 20,000 shares without nominal or par value.

Corporate Members.—James Steller Lovell, accountant; William Bain, book-keeper; Robert Gowans, John Henry, Arthur Claude Simonds, and Ernest Harold Stewart, solicitor's clerks; Laura Tinney, and Christina Henry, stenographers; and George Grant Paulin, solicitor; all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief Place of Business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 4314, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued May 27, 1918, to
"GUARANTY PLAN, LIMITED."

Changing the corporate name of the said company to that of

"CONTINENTAL GUARANTY CORPORATION OF CANADA, LIMITED."

Vide p. 4222, *Canada Gazette*, 1918.

"CLYDE ENGINEERING COMPANY, LIMITED."

Incorporated May 28, 1918. - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Francis Toy Peacock, engineer; Lettice Margery Peacock, gentlewoman; Herbert Kennedy, manufacturer; John Bryson, manager; and Leon Daoust, clerk; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 4316, *Canada Gazette*, 1917-18.

"BRITISH COLUMBIA COAL AND LAND COMPANY, LIMITED."

Incorporated May 28, 1918. - - - - - Amount of capital stock, $750,000. Number of shares, 7,500.—Amount of each share, $100.

Corporate Members.—Henry Arnold Burbidge, John Roy Marshall and Arthur Burgess Turner, barristers-at-law; George Alexander Young, solicitor's clerk, and Amy Helena Johnson, stenographer, all of Hamilton, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 4312, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued May 30, 1918, to

"O. W. MEISSNER, LIMITED."

Changing the corporate name of the said company to that of

"EQUIPMENT SPECIALTIES, LIMITED."

Vide p. 4320, *Canada Gazette*, 1918.

"THE ALBERTA LINSEED OIL COMPANY, LIMITED."

Incorporated May 31, 1918. - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—Walter Robert Lorimer Shanks, advocate; Francis George Bush, book-keeper, George Robert Drennan, stenographer; Herbert William Jackson, and Michael Joseph O'Brien, clerks, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Medicine Hat, Alta.
Objects of the Company.—*Vide* p. 4403, *Canada Gazette*, 1917-18.

"CANADIAN NORTHERN ROLLING STOCK, LIMITED."

Incorporated, May 31, 1918. - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—David Blythe Hanna, railway official; Gerard Ruel, Archibald James Reid, and Reginald Herbert Montague Temple, barristers-at-law; and Robert Phipps Ormsby, secretary, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 4396, *Canada Gazette*, 1917-18.

"CARTER, WOOD SHIPPING COMPANY, LIMITED."

Incorporated May 31, 1918 - - - - - - - - Amount of capital stock, $40,000. Number of shares. 400.—Amount of each share, $100.

Corporate Members.—Warwick Fielding Chipman, advocate; Francis George Bush, book-keeper; George Robert Drennan, stenographer; Michael Joseph O'Brien, and Herbert William Jackson, clerks; all of the City of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 4318, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued May 31, 1918 to

"SCRAP METALS, LIMITED."

Changing the corporate name of the said company to that of

"UNIVERSAL TRADING & EQUIPMENT COMPANY, LIMITED."

Vide p. 4320, *Canada Gazette*, 1918.

SESSIONAL PAPER No. 29

"POLISH CITIZENS COMMITTEE OF MONTREAL, QUEBEC, CANADA."

(Association.)

Incorporated May 31, 1918 - - - - - - - - - - - - - Without share capital.

Corporate Members.—Andrzej Kurminski, butcher; Ignacy Arcisz, cabinet-maker; and Franciszek Wylot, carpenter; all of Lachine, Que.; Antoni Tubielewicz, carpenter; Antoni Wronski and Jozef Wilamowski, bakers; Michal Dunski and Ludwik Josephi, machinists; Marijan Wszynski, cabinet-maker; Adolf Niezbrzycki, merchant, and Henry Sitarski, teacher, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 4320, *Canada Gazette*, 1917-18.

"JOHN FORSYTH, LIMITED."

Incorporated June 1, 1918 - - - - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—John Derby Claude Forsyth, manufacturer; Edwin Whyte Clement, and William Pope Clement, barristers-at-law; Rubie Mary Fisher and Eva Belle Clemens, stenographers, all of Kitchener, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Kitchener, Ont.
Objects of the Company.—*Vide* p. 380, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued June 4, 1918, to

"RUSSO-CANADIAN DEVELOPMENT CORPORATION, LIMITED."

Increasing the capital stock of the said company from the sum of $7,500,000 to the sum of $15,000,000 being an addition of 1,500,000 shares of $5 each to the present capital stock.

Vide p. 4408, *Canada Gazette*, 1918.

"HOSIERS, LIMITED."

Incorporated June 4, 1918. - - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—John Macnaughton, advocate; James Geary Cartwright, office manager; Henry William Austin, and Edgar John Thompson, managers; and Ethel Maude Kelly, stenographer; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 4404, *Canada Gazette*, 1917-18.

"ELECTRIC WELDING & SHIPBUILDING CO., OF CANADA, LIMITED."

Incorporated June 5, 1918. - - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John Joseph Meagher, Henry Noel Chauvin, and James Edouard Coulin; all of His Majesty's Counsel learned-in-the-law; Hugh Wylie and Christina Imrie, book-keepers; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 4405, *Canada Gazette*, 1917-18.

"THE TROJA STEAMSHIP COMPANY, LIMITED."

Incorporated June 5, 1918. - - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Edouard Fabre Surveyer, of Outremont, Que. King's Counsel; William Langley Bond, King's Counsel; Pierre Arbour, student-at-law, Jeanne Lallamme, stenographer; and John Bicknell Johnson, book-keeper; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 4407, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued June 6, 1918, to

"SHERER-GILLETT COMPANY, LIMITED,"

Increasing the capital stock of the said company from the sum of $50,000 to the sum of $100,000, being an addition of 500 shares of $100 each to the present capital stock.

Vide p. 4408, *Canada Gazette*, 1918.

"THE MONARCH METAL COMPANY, LIMITED."

Incorporated June 6, 1918. - - - - - - - - Amount of capital stock, $250,000. Number of shares, 2,500—Amount of each share, $100.

Corporate Members.—John Roy Marshall, and Arthur Burgess Turner, barristers-at-law; George Alexander Young, solicitor's clerk; William Hazell, law student; and Amy Helena Johnson, stenographer; all of Hamilton, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 4402, *Canada Gazette*, 1917-18.

"NEVERFAIL PRODUCTS, LIMITED."

Incorporated June 6, 1918. - - - - - Amount of capital stock, $50,000. Number of shares, 500—Amount of each share, $100.

Corporate members.—Henry Arnold Burbidge, and John Roy Marshall, barristers-at-law; George Alexander Young, solicitor's clerk; William Hazell, law student; and Isabel Vila, book-keeper; all of Hamilton, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 4397, *Canada Gazette*, 1917-18.

"CANADIAN DRIVER-HARRIS COMPANY, LIMITED."

(As a private company.)

Incorporated June 6, 1918 - - - - - - - - Amount of capital stock, $150,000. Number of shares, 1,500—Amount of each share, $100.

Corporate Members.—Leon Otto Hart, manufacturer, and LeRoy Edwards, superintendent, both of Jersey City, N.J., U.S.A.; William Parmenter Martin, Esquire, of Newark, N.J., U.S.A.; Alexander Simmers, real estate dealer, of Windsor, Ont.; and John Henry Coburn, barrister-at-law, of Walkerville, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Walkerville, Ont.

Objects of the Company.—*Vide* p. 4406, *Canada Gazette*, 1917-18.

"MOUNT ROYAL CREDIT, LIMITED."

CREDIT MONT-ROYAL, LIMITEE.

Incorporated June 7, 1918. - - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Arthur Vallée, King's Counsel; Rosario Genest, and Arthur Reginald Whitney Plimsoll, advocates; Ernest Markgraf, secretary, and René Bourdon accountant, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 4483, *Canada Gazette*, 1917-18.

"WILBERFORCE MOLYBDENITE, LIMITED."

Incorporated June 7, 1918. - - - - - - - - - Amount of capital stock, $250,000. Number of shares, 250,000—Amount of each share, $1.

Corporate Members.—Lena Adams, book-keeper, Vera Marion Gray, and Blanche Mabel Gray, teachers, Henry Cartwright Secord, broker, and John Armstrong Burgess, chemist, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 4401, *Canada Gazette*, 1917-18.

"O'BRIEN MOTOR SERVICES, LIMITED."

Incorporated June 10, 1918. - - - - - - - - Amount of capital stock, $250,000. Number of shares, 25,000.—Amount of each share, $10.

Corporate Members.—Richard Tuson Heneker, and Henry Noel Chauvin, both of His Majesty's Counsel, learned-in-the-law; Hugh Wylie, accountant, Inez Lillian MacCallum, stenographer, of Montreal, Que., and Christina Imrie, of Westmount, Que., clerk.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 4399, *Canada Gazette*, 1917-18.

"LA COMPAGNIE D'ELEVAGE DE STE. THERESE, LIMITEE."

Incorporated June 11, 1918. - - - - - - - - Amount of capital stock, $1,000,000.

Number of shares, 5,000 preferred and 5,000 common.—Amount of each share, $100.
Corporate Members.—Charles Edmond Lefebvre, Antonio Lefebvre, and Edmond Lefebvre, clerks, Xavier Lauzon and Maurice Rodière Briquet, farmers, all of Sainte-Thérèse de Blainville, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Sainte-Thérèse de Blainville, Qué.
Objects of the Company.—*Vide* p. 4532, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued June 12, 1918, to

"DAPRATO STATUARY COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $2,000 to the sum of $10,000, being an addition of 800 shares of $10 each to the present capital stock.

Vide p. 4486, *Canada Gazette*, 1918.

"BRITISH COLONIES TRANSPORTATION COMPANY, LIMITED."

Incorporated June 12, 1918. - - - - - - - - Amount of capital stock, $750,000. Number of shares, 7,500.—Amount of each share, $100.

Corporate Members.—Mansell Elford Sweetman, broker; Arthur Wellesley Holmestead and Lancing Belmont Campbell, barristers-at-law; Edith Mary Carruthers and Aileene Ritchie, stenographers, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—St. John, N.B.
Objects of the Company.—*Vide* p. 4485, *Canada Gazette,* 1917-18.

Supplementary Letters Patent issued June 14, 1918, to

"CHALIFOUX-DIGNARD, LIMITEE,"

Changing the corporate name of the said company to that of

"DIGNARD & BENOIT, LIMITEE."

Vide p. 4581, *Canada Gazette,* 1918.

"DOMINION SHEET METAL CORPORATION, LIMITED."

Incorporated June 15, 1918. - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—John Roy Marshall, Henry Arnold Burbidge, and Arthur Burgess Turner, barristers-at-law; George Alexander Young, solicitors' clerk, and William Hazell, student-at-law, all of Hamilton, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Hamilton, Ont.
Objects of the Company.—*Vide* p. 4482, *Canada Gazette,* 1917-18.

"COMMONWEALTH CHEMICAL CORPORATION OF CANADA, LIMITED."

(As a private company.)

Incorporated June 15, 1918. - - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Mary Elizabeth Cherrier, Eva Levitt, Kate Campbell, and Lucia Cecilla Allen, stenographers, John Claude Manley German, John Francis Boland and Walter Joseph Boland, barristers-at-law, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 4481, *Canada Gazette,* 1917-18.

"THE F. E. PARTRIDGE RUBBER COMPANY, LIMITED."

Incorporated June 17, 1918. - - - - - - - - Amount of capital stock, $2,250,000. Number of shares, 45,000.—Amount of each share, $50.

Corporate Members.—Leo William Goetz and Richard Dalton Walter, solicitors, Helen McTague, book-keeper, Pearl Yates, stenographer, and John Sutherland, jr., insurance agent, all of Guelph, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Guelph, Ont.
Objects of the Company.—*Vide* p. 4572, *Canada Gazette,* 1917-18.

"L'AIDE A LA FRANCE."

(Association.)

Incorporated June 17, 1918. - - - - - - - - - - - - - Without share capital.

Corporate Members.—Marguerite Thibaudeau, Lady Jane Williams-Taylor, Louise Skinner, Elmire Tarut, Madeleine Huguenin, Elodie Archer, Cora Kelly and Marie Masson, married women, Gertrude Clergue, spinster, Alfred Tarut, Raoul Dandurand and Charles Beaubien, Senators, and Emmanuel Persillier Lachapelle, doctor, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 4484, *Canada Gazette*, 1917-18.

"EDINBURGH PATRIOTIC CLUB."

(Association.)

Incorporated June 18, 1918. - - - - - - - - - - - - - Without share capital.

Corporate Members.—Annie Hay Louttit, restaurant keeper, James Alexander Wright, gentleman, Mary Archer, Nellie Barrat, Marguerite Gordon Mitchell, and Mary Coleman, married women, Mary Fitchett, stenographer, and Margaret Ladouceur, dry goods storekeeper, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 4484, *Canada Gazette*, 1917-18.

"THE PEERLESS COAL COMPANY, LIMITED."

Incorporated June 18, 1918. - - - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—Gordon Walters MacDougall and Lawrence Macfarlane, both of His Majesty's Counsel, learned-in-the-law, John Macnaughton, advocate; James Geary Cartwright, office manager; and Ethel Maud Kelly, stenographer; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—City of Toronto, Ont.

Objects of the Company.—*Vide* p. 4576, *Canada Gazette*, 1917-18.

"THE CATHOLIC TRUTH SOCIETY, OF CANADA."

(Association.)

Incorporated June 18, 1918. - - - - - - - - - - - - Without share capital.

Corporate Members.—James Peter Murray, Christian Charles Macnamara, Francis Joseph Murphy, James Patrick Hynes, Hugh Fraser McIntosh, Charles Frank Leonard, George Francis Rooney, Arthur Edwin Radcliff, James O'Hagan, Joseph Leo Seitz, William Edward Blake, Charles Edward Johnston, James Edward Day, James Francis Copeland, Edward Fawcett Henderson, Richard Patrick Gough, Augustine Joseph Gough, Frank McLaughlin, David Arthur Balfour, James Joseph Walsh, Peter Francis Dolan, Frank Ryan, William Henry McGuire, Thomas Costello, John Goodyear Hall, James O'Reilly, and John Francis Boland, Esquires, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 4575, *Canada Gazette*, 1917-18.

Supplementary Letters Patent, issued June 19, 1918, to

"H. A. DRURY COMPANY, LIMITED."

Decreasing the capital stock of the said company from the sum of $200,000 to the sum of $50,000, such decreased capital stock to consist of 500 shares of $100 each.

Vide p. 4581, *Canada Gazette*, 1918.

"HIRAM WALKER & SONS CHEMICAL COMPANY, LIMITED."

(As a private company.)

Incorporated June 19, 1918. - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Harrington Edward Walker and Hiram Holcomb Walker, manufacturers; William Henry Isaacs, manager; Harrie Renz Dingwall, superintendent; Niels Christian Ortved, chemist; Clement King and Edgar Francis Ladore, secretaries, all of Walkerville, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Walkerville, Ont.

Objects of the company.—*Vide* p. 4573, *Canada Gazette*, 1917-18.

"LA COMPAGNIE NATIONALE DES MOULINS A FARINE, LIMITEE."

Incorporated June 19, 1918. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Jean Baptiste David Légaré, promoter; Alexandre Papineau Mathieu and Armand Mathieu, advocates; Henri Valade, accountant; and Henri Guenette, speculator; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 4625, *Canada Gazette*, 1917-18.

"FARO INVESTMENT COMPANY, LIMITED."

(As a private company.)

Incorporated June 19, 1918. - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Frederick Henry Markey, advocate and King's Counsel; George Gordon Hyde, advocate; Ronald Cameron Grant, accountant; and Elizabeth Russell McKenzie and Christina Macallum Palliser, secretaries; all of Montreal, Que.

First or Provisional Directors.—Frederick Henry Markey, George Gordon Hyde and Ronald Cameron Grant.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 4574, *Canada Gazette*, 1917-18.

"STANWAY-HUTCHINS, LIMITED."

Incorporated June 19, 1918. - - - - - - - Amount of capital stock, $21,000. Number of shares, 210.—Amount of each share, $100.

Corporate Members.—Herbert Morris Stanway and George Marriott Waterhouse, merchants; John D'Oyley Hutchins, manager; Thomas Spear Simpson, secretary; and Walter Seely Johnson, barrister; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 4575, *Canada Gazette*, 1917-18.

SESSIONAL PAPER No. 29

"ALLIED DRUG COMPANY, LIMITED."

Incorporated June 20, 1918. - - - - - - - Amount of capital stock, $100,000. Number of shares, 10,000.—Amount of each share, $10.

Corporate Members.—Grant Cooper, barrister-at-law; Clarence Snider, Howard Addison Hall, Thomas Blake Farrell and Frederick Harold McCallum, students-at-law; all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 147, *Canada Gazette*, 1918-19.

"F. H. A. ACER & COMPANY, LIMITED."

Incorporated June 22, 1918. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Walter Robert Lorimer Shanks, advocate; Francis George Bush, book-keeper; George Robert Drennan, stenographer; Michael Joseph O'Brien, and Herbert William Jackson, clerks; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—Vide p. 4580, *Canada Gazette*, 1917-18.

"H. G. SMITH, LIMITED."

(As a private company.)

Incorporated June 22, 1918. - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Joseph Max Bullen, and Norman Stuart Robertson, barristers-at-law; Wendell Osborne, student-at-law; Agnes Porter Traill, accountant; and Lena Duff, stenographer; all of Toronto, Ont.

First or Provisional Directors.—Joseph Max Bullen, Norman Stuart Robertson, and Wendell Osborne.

Chief place of Business.—Regina, Sask.

Objects of the Company.—*Vide* p. 370, *Canada Gazette*, 1918-19.

"OLDFIELD APARTMENTS, LIMITED."

Incorporated June 22, 1918. - - - - - - - Amount of capital stock, $250,000. Number of shares, 2,500.—Amount of each share, $100.

Corporate Members.—Charles Arthur Sara, manager; Ross Thompson, civil engineer; Lorne Clayton Herdman, stock broker; George Edward Chart, accountant; and Bertha Charlebois, stenographer; all of Montreal, Que.

First or Provisional Directors.—Charles Arthur Sara, Ross Thompson and Lorne Clayton Herdman.

Chief Place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 4577, *Canada Gazette*, 1917-18.

"BEAUX-ARTS RELIEF ASSOCIATION."

(Association.)

Incorporated June 22, 1918. - - - - - - - Without share capital.

Corporate Members.—The Honourable Frank Egerton Hodgins, and the Honourable William Nassua Ferguson, Justices of Appeal; The Honourable Cornelius Arthur Masten, Justice of the Supreme Court of Ontario; Geoffrey Teignmouth Clarkson, chartered accountant; and William Beardsley Raymond, barrister-at-law; all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 4578, *Canada Gazette*, 1917-18.

Supplementary Letters Patent issued June 24, 1918, to

"DOMINION BLANK BOOK COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $75,000 to the sum of $150,000, being an addition of 750 shares of $100 each to the present capital stock.

Vide p. 4581, *Canada Gazette*, 1918.

"CANADIAN REFRACTORIES, LIMITED."

Incorporated June 24, 1918. - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—Peter Bercovitch, advocate and King's Counsel; Ernest Lafontaine and Nathan Gordon, advocates; James Johnston, accountant, and Margaret McMartin, clerk, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 53, *Canada Gazette*, 1918-19.

"TOPLIS & HARDING, LIMITED."

(As a private company.)

Incorporated June 24, 1918. - - - - Amount of capital stock, $3,000. Number of shares, 30.—Amount of each share, $100.

Corporate Members.—John Wesley Blair and Francis Joseph Laverty, both of His Majesty's Counsel learned-in-the-law, of Westmount, Que.; Charles Albert Hale and August Angers, advocates, of Montreal, Que.; and Graham Harding, of London, Eng., adjuster.
First or Provisional Directors.—John Wesley Blair, Francis Joseph Laverty, and Charles Albert Hale.
Chief place of Businesss.—Montreal, Que.
Objects of the Company.—*Vide* p. 56, *Canada Gazette*, 1918-19.

"THE GOLDEN WONDER MINING COMPANY, LIMITED."

Incorporated June 25, 1918. - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Margaret Duncan Gray, Thester Anna McClennan, and Ray Montgomery, stenographers; Robert Martin and Cyril Scotts Newton, Esquires; all of Toronto, Ont.
First or Provisional Directors.—Margaret Duncan Gray, Thester Anna McClennan, and Ray Montgomery.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 52, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"THE SHERBROOKE BUSINESS CORPORATION, LIMITED."

Incorporated June 25, 1918. - - - - - Amount of capital stock, $49,000. Number of shares, 490.—Amount of each share, $100.

Corporate Members.—Patrick John Wolfe, contractor; Camille Sifroid Milette, manufacturer's agent; Frank Payette, insurance agent; Joseph Wilfrid Grégoire, architect, and Léonidas Bachand, notary, all of Sherbrooke, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Sherbrooke, Que.
Objects of the Company.—*Vide* p. 55, *Canada Gazette*, 1918-19.

"GLOBE ELECTRIC COMPANY OF CANADA, LIMITED."

Incorporated June 25, 1918. - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000—Amount of each share, $100.

Corporate Members.—Oliver Frank Lightcap, manufacturer's agent; John Lorne Harrison, secretary; Alexander James Milligan, Horatio Wallace, and Charles Stubbs Brown, solicitors; Thomas Ernest Meredith, law clerk; and William Arthur Deacon, student-at-law; all of Winnipeg, Man.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Winnipeg, Man.
Objects of the Company.—*Vide* p. 57, *Canada Gazette*, 1918-19.

"N. C. POLSON & CO. LIMITED."

Incorporated June 25, 1918. - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000—Amount of each share, $100.

Corporate Members.—Neil Currie Polson, senior, and Neil Currie Polson, junior, manufacturers; Stuart McDowall Polson, physician; Jessie Currie Polson, spinster; and Isabelle Johnston Davis, married woman; all of Kingston, Ont.
First or Provisional Directors.—Neil Currie Polson, senior; Neil Currie Polson, junior; and Stuart McDowell Polson.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 56, *Canada Gazette*, 1918-19.

"CANNERS SEEDS, LIMITED."

Incorporated June 25, 1918. - - - - - - Amount of capital stock, $100,000.

Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Malcolm Blake Clark, and Everett Lee Hubbs, farmers; and Gordon Ernest Matthews, canner, of Wellington, Ont.; Edward Alfred Pearce, canner, of Bloomfield, Ont.; Robert Edward Wright, canner, of Picton, Ont.; John Stanley Edgecombe, canner, of Napanee, Ont.; Samuel Nesbitt, canner, of Brighton, Ont.; William Norman McDougall, canner, of Lakeport, Ont.; and George Harold Stinson, canner, of Cobourg, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Wellington, Ont.
Objects of the Company.—*Vide* p. 55 *Canada Gazette*, 1918-19.

"INDUSTRIAL SPECIALTY MANUFACTURING COMPANY, LIMITED."

(As a private company.)

Incorporated June 25, 1918. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John Wesley Blair, and Francis Joseph Laverty, both of His Majesty's Counsel learned-in-the-law, of Westmount, Que.; Charles Albert Hale, advocate, of Montreal West, Que., and Auguste Angers, advocate, and Edythe Lillian Pearson, clerk, of Montreal, Que.

First or Provisional Directors.—John Wesley Blair, Francis Joseph Laverty and Charles Albert Hale.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p., *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued June 26, 1918, to

"JULIUS KAYSER & CO., LIMITED."

Increasing the capital stock of the said company from the sum of $25,000 to the sum of $500,000 being an addition of 4,750 shares of $100 each to the present capital stock.

Vide p. 58, *Canada Gazette*, 1918-19.

"PETERSON FRUIT COMPANY, LIMITED."

Incorporated June 26, 1918. - - - - - - - - Amount of capital stock, $25,000. Number of shares, 250.—Amount of each share, $100.

Corporate Members.—Peter Theodore Peterson, manager; Walter Stewart, salesman; Sidney Ahern, clerk; Henry Noel Chauvin, King's Counsel, and Harold Earle Walker, advocate, all of Montreal, Que.

First or Provisional Directors.—Peter Theodore Peterson, Walter Stewart and Sidney Ahern.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 54, *Canada Gazette*, 1918-19.

"O. LECLAIR, LIMITED."

Incorporated June 27, 1918. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Oscar Leclair, pork-packer; Honoré Orpha Patenaude, accountant, Maida Patenaude, wife of said Honoré Orpha Patenaude, Rolland Leclair, clerk, Philippe Telmas Sylvain, bank manager, and Joseph Albert Tassé, musician, all of Ottawa, Ont.

First or Provisional Directors.—Oscar Leclair, Honoré Orpha Patenaude and Maida Patenaude.

Chief place of Business.—Ottawa, Ont.

Objects of the Company.—*Vide* p. 148, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued June 27, 1918, to

"DOMINION IRON AND WRECKING COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $50,000 to the sum of $1,000,000, being an addition of 9,500 shares of $100 each to the present capital stock.

Vide p. 58, *Canada Gazette*, 1918-19.

"LYMCO CORPORATION, LIMITED."

Incorporated June 27, 1918. - - - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—Joseph Edouard Hurtubise, private secretary; Joseph Louis Lemieux, mechanic; Philip Reynolds, marine engineer, Hirsch Noah Friedman, retired merchant, and Thomas Francis McCaffery, accountant, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 51, *Canada Gazette*, 1918-19.

"CORNWALL TERMINAL COMPANY, LIMITED."

(As a private company.)

Incorporated June 27, 1918. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—George Archibald Campbell, King's Counsel; Auguste Angers, advocate, Minnie Bradley, Margaret Hartley, and Dorothy Eva Vipond, stenographers, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 161, *Canada Gazette*, 1918-19.

"THE CANADIAN HOME CANNING ASSOCIATION, LIMITED."

"L'ASSOCIATION CANADIENNE DES CONSERVES DOMESTIQUES, LIMITEE."

Incorporated June 28, 1918. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Edouard Fabre Surveyer and William Langley Bond, both of His Majesty's Counsel learned-in-the-law, Elizabeth May Silver and Jeanne Laflamme, stenographers, and Emile Girard, insurance agent, all of Montreal, Que.

First or Provisional Directors.—Edouard Fabre Surveyer, William Langley Bond, and Elizabeth May Silver.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 155, *Canada Gazette*, 1918-19.

"JOHN COWAN CHEMICAL COMPANY, LIMITED."

(As a private company.)

Incorporated June 28, 1918. - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Richard Lister Gaunt, Giffard Lawrence Lafolley and Reginald Tait Gaunt, merchants, and Edward Ernest Wells, chemist, all of Westmount, Que., and Louis Armand Gelinas, cashier, of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 156, *Canada Gazette*, 1918-19.

"NORTH AMERICAN ARMS COMPANY, LIMITED."

Incorporated June 28, 1918. - - - - - - - - Amount of capital stock, $2,000,000. Number of shares, 20,000.—Amount of each share, $100.

Corporate Members.—Edmond Baird Ryckman and John Shirley Denison, both of His Majesty's Counsel learned-in-the-law, Hugh Day Scully, assistant general manager, William James Beaton, solicitor, Elizabeth Young, Edith Emily Duncan, and Alma Buchanan, stenographers, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Quebec, Que.

Objects of the Company.—*Vide* p. 151, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued June 29, 1918, to

"B. WEISS & SON, LIMITED."

Increasing the capital stock of the said company from the sum of $45,000 to the sum of $100,000, being an addition of 550 shares of $100 each to the present capital stock.

Vide p. 162, *Canada Gazette*, 1918-19.

"DOMINION SHIPBUILDING COMPANY, LIMITED."

(As a private company.)

Incorporated June 29, 1918. - - - - - - - - - Amount of capital stock, $3,000,000. Number of shares, 30,000.—Amount of each share, $100.

Corporate Members.—Joseph Max Bullen, and Norman Stuart Robertson, barristers-at-law; Wendell Osborne, student-at-law; Agnes Porter Traill, accountant, and Lena Duff, stenographer, all of Toronto, Ont.

First or Provisional Directors.—Joseph Max Bullen, Norman Stuart Robertson and Wendell Osborne.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 149, *Canada Gazette*, 1918-19.

"THE BIG SIX CEREAL COMPANY, LIMITED."

Incorporated July 2, 1918. - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Samuel Gerald Tritt and Saul Tritt, advocates; Nicholas Swan and Herbert Webb, accountants, and Edna Urquhart, secretary, all of Montreal, Que.

First or Provisional Directors.—Samuel Gerald Tritt, Saul Tritt and Nicholas Swan.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 160, *Canada Gazette*, 1918-19.

"COALS COMPANY, LIMITED."

Incorporated July 2, 1918. - - - - - - - - - Amount of capital stock, $1,500,000. Number of shares, 15,000.—Amount of each share, $100.

Corporate Members.—William Kenneth McKeown, Advocate and King's Counsel; Lorne Clayton Herdman, stock broker; George Edward Chart, accountant; and Berthe Charlebois, and May Beatrice Flanagan, stenographers, all of Montreal, Que.

First or Provisional Directors.—William Kenneth McKeown, Lorne Clayton Herdman and George Edward Chart.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 158, *Canada Gazette*, 1918-19

Supplementary Letters Patent issued July 2, 1918, to

"DIENER GAS AND MANUFACTURING COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $100,000 to the sum of $150,000, being an addition of 5,000 shares of $10 each to the present capital stock.

Vide p. 58, *Canada Gazette*, 1918-19.

"DOMINION SHOE, LIMITED."

"LA CHAUSSURE DOMINION, LIMITEE."

Incorporated July 3, 1918. - - - - - - - - Amount of capital stock, $100,000 Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Eugene Coté and Rosario Coté, manufacturers; Maria Giguère, stenographer; Henri Bourbonnière, Joseph Martel, and Jules Noel, shoemakers; and Prime Prenovost, agent; all of Montreal, Que.
First or Provisional Directors.—Eugene Coté, Rosario Coté and Prime Prenovost.
Chief place of business.—Montreal, Que.
Objects of the Company.—*Vide* p. 200, *Canada Gazette*, 1918-19.

"E. & A. GUNTHER COMPANY, LIMITED."

Incorporated July 3, 1918. - - - - - - - - - Amount of capital stock, $150,000. Number of shares, 1,500.—Amount of each share, $100.

Corporate Members.—Samuel King, Oscar Heuman King, solicitors; Effie Lane, Lillis Sleeth, and Eva Olive Reid, stenographers, all of Toronto, Ont.
First or Provisional Directors.—Samuel King, Oscar Heuman King, and Eva Olive Reid.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 157, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued July 3, 1918, to

"THE A. MACDONALD COMPANY, LIMITED."

Changing the corporate name of the said company to that of

"WESTERN GROCERS, LIMITED."

Vide p. 163 *Canada Gazette*, 1918-19

"A. A. GIDDINGS & CO., LIMITED."

Incorporated, July 3, 1918 - - - - - - - - - Amount of capital stock, $50,000 Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Louis Athanase David and Louis Philippo Crepeau, both of His Majesty's Counsel learned-in-the-law; Segfried Hinson Read Bush, advocate, George Whittaker, accountant; and John Parker Callaghan, student-at-law; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 154, *Canada Gazette*, 1918-19.

"R. H. COMEY COMPANY, LIMITED."

Incorporated July 4, 1918 - - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—James Stewart, accountant; Hamilton James Stuart, and Arthur Howard Robertson, barristers-at-law; Evelyn Burr, stenographer, and Gertrude Elizabeth Hancock, bookkeeper, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Busness.—Toronto, Ont.
Objects of the Company.—*Vide* p. 152, *Canada Gazette*, 1918-19.

"CANADIAN UKRAINIAN INSTITUTE PROSVITA."

(Association.)

Incorporated July 4, 1918. - - - - - - - - - - - - - Without share capital.

Corporate Members.—John Bassarab, Theodore Stefanik, students-at-law; John Marcinov, carpenter; Rev. Peter Oleksiv, pastor; Emil Orebks, Stefan Horbachevsky, Stefan Medvid, Michael Harvyluk, labourers; and John Zavidovsky, undertaker; all of Winnipeg, Man.
First or Provisional Directors.—John Bassarab, Theodore Stefanik, John Marcinov and Rev. Peter Oleksiv.
Chief place of Business.—Winnipeg, Man.
Objects of the Company.—*Vide* p. 160 *Canada Gazette*, 1918-19.

"LE CHEPTEL CANADIEN, LIMITEE."

Incorporated July 5, 1918. - - - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Joseph Jean, advocate, of Pointe-aux-Trembles, Que; Joseph Albert Desjardins, licensed in law; Laurent Desjardins, student-at-law; and Joseph provost, manufacturer, of Sainte-Thérese, Que.; and Arthur Provost, manufacturer, of Montrel, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 310, *Canada Gazette*, 1918-19.

"NIAGARA PANAMA & STRAW HAT COMPANY, LIMITED."

Incorporated July 5, 1918. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Cecil Vanroy Langs, and Ewart Gladstone Binkley, barristers-at-law; Nellie Moore, bookkeeper; May Tydd and Edna Marguerite Green, stenographers, all of Hamilton, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Niagara Falls, Ont.
Objects of the Company.—*Vide* p. 158, *Canada Gazette*, 1918-19.

"SARNIA COAL & DOCK COMPANY, LIMITED."

Incorporated July 6, 1918. - - - - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—Peter Paton, merchant; Robert Irwin Towers, and John Cowan, the younger, barristers-at-law; and Ann Wismer and Caroline Mary Cowan, stenographers, all of Sarnia, Ont.

First or Provisional Directors.—Peter Paton, Robert Irwin Towers and John Cowan, the younger.

Chief place of Business.—Sarnia, Ont.

Objects of the Company.—*Vide* p. 685, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued July 8, 1918, to

"THE JAMES GOLDIE COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $100,000 to the sum of $300,000, being an addition of 2,000 shares of $100 each to the present capital stock.

Vide p. 268, *Canada Gazette*, 1918-19.

"PROGRESSIVE LEATHER GOODS, LIMITED."

Incorporated, July 8, 1918. - - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Max Bercovitz, manufacturer; Ladislas Arthur Joubert, and Eugéne Joachin Jodoin, accountants; Paul Gaudry, clerk; and Iréné Léandre Bourcier, book-keeper; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 267, *Canada Gazette*, 1918-19.

"ÆTNA COAL NUGGET COMPANY, LIMITED."

Incorporated July 8, 1918. - - - - - - - - - Amount of capital stock, $75,000. Number of shares, $7,500.—Amount of each share, $10.

Corporate Members.—Horace Mantha and Emile Carriere, commercial agents; Marie Joseph Bazile Roy, secretary, International Musician Union; Edgar Carriere, clerk, and Ernest Duplessis, merchant optician; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 308, *Canada Gazette*, 1918-19.

"SHEPARD & MORSE LUMBER COMPANY (CANADA), LIMITED."

(As a private company.)

Incorporated, July 8, 1918. - - - - - - - - - Amount of capital stock, $2,000,000. Number of shares, 20,000.—Amount of each share, $100.

Corporate Members.—Philemon Charles Walker, manager; John Grange Buchanan, cashier; James Sutphin Chamberlain, bookkeeper; and John Fosberry Orde, and Montagu Grant Powell, barristers-at-law; all of Ottawa, Ont.

First or Provisional Directors.—Philemon Charles Walker, John Grange Buchanan, and James Sutphin Chamberlain.

Chief place of Business.—Ottawa, Ont.

Objects of the Company.—*Vide* p. 379, *Canada Gazette* 1918-19.

Supplementary Letters Patent, issued July 8, 1918, to

"GEORGE ANDERSON & COMPANY OF CANADA, LIMITED."

Decreasing the Capital Stock of the said company from the sum of $40,000 to the sum of $10,000 such decreased capital stock to consist of 400 shares of $25 each
Vide p. 268, *Canada Gazette*, 1918-19.

"DOMESTIC ENGINEERING SPECIALTY CO., LIMITED."

Incorporated, July 9, 1918. - - - - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—Louis Athanase David, and Louis Philippe Crepeau, both of His Majesty's Counsel learned-in-the-law; Segfried Hinson Read Bush, advocate; George Whittaker, accountant; John Parker Callaghan, Benjamin Robinson, and Eugene Simard, students-at-law; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 267, *Canada Gazette*, 1918-19.

"CANADIAN LEATHER PRODUCTS, LIMITED."

(As a private company.)

Incorporated July 9, 1918. - - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Joseph Max Bullen, and Norman Stuart Robertson, barristers-at-law; William Levy, book-keeper; Agnes Porter Traill, accountant; and Lena Duff, stenographer; all of the City of Toronto.

First or Provisional Directors.—Joseph Max Bullen, Norman Stuart Robertson, and William Levy.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 262, *Canada Gazette*, 1918-19.

"ITALIAN CANADIAN SOLDIERS' AID."

(Association.)

Incorporated July 9, 1918. - - - - - - - - - - - - - Without share capital.

Corporate Members.—Cavaliere Victor Emmanuel Gianelli, gentleman; George Glionna, physician, and acting royal vice-counsel for Italy; Frank Denton, King's Counsel; Joseph Bagnato, custom's official; and Eugenio D'Angelo, steamship agent; all of Toronto, Ont.

First or Provisional Directors.—Cavaliere Victor Emmanuel Gianelli, George Glionna and Frank Denton.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 268, *Canada Gazette*, 1918-19.

"THE VIKING CORPORATION OF CANADA, LIMITED."

Incorporated July 10, 1918. - - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Thomas Hubert Wilson and Jacob Willian Broudy, barristers-at-law; William Ralph Bird, broker; John Richards, builder; and Mary McQuillan, stenographer; all of Toronto, Ont.

First or Provisional Directors.—Thomas Hubert Wilson, Jacob William Broudy and John Richards.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 268, *Canada Gazette*, 1918-19.

"THE NATIONAL MOLYBDENITE COMPANY, LIMITED."

Incorporated July 11, 1918. - - - - - - - - - - Amount of capital stock, $1,500,000. Number of shares, 1,500,000.—Amount of each share, $1.

Corporate Members.—Henry Jasper Martin, and Charles Evans-Lewis, barristers-at-law; Thomas Neville Poole, law clerk; Ida Black, stenographer; and Arthur Deane Parker, broker; all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 262, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued July 12, 1918, to

"UNIVERSAL COMMISSION COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $40,000 to the sum of $75,000, being an addition of 350 shares of $100 each to the present capital stock.

Vide p. 383, *Canada Gazette,* 1918-19.

"THE CANADIAN BRANCH OF SCOTTISH WOMEN'S HOSPITALS."

(Association.)

Incorporated July 12 1918. - - - - - - - - - - - Without share capital.

Corporate Members.—D'Arcy Scott, assistant chief commissioner, Board of Railway Commissioners for Canada; Charles Albert Gray, manager (Ottawa Branch), Royal Bank of Canada; William Ezra Mathews, President, Mathews-Blackwell, Limited; Robert Geddes Dobier, manager, and Robert George Code, barrister-at-law; all of the City of Ottawa, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 268, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued July 13, 1918, to

"MOTOR TRUCKS, LIMITED."

Increasing the capital stock of the said company from the sum of $500,000 to the sum of $1,000,000 being an addition of 5,000 shares of $100 each to the present capital stock.

Vide p. 383, *Canada Gazette,* 1918-19.

"DOMINION PRINTING INK & COLOR COMPANY, LIMITED."

Incorporated, July 13, 1918. - - - - - - - - - Amount of capital stock, $40,000. Number of shares, 400.—Amount of each share, $100.

Corporate Members.—Gideon Grant, Mervil MacDonald, and Edwin Smily, barristers-at-law; Lina Rogers, stenographer; and Aileen Silk, student-at-law; all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 265, *Canada Gazette,* 1918-19

"HENDRIE INVESTMENT COMPANY, LIMITED."

(As a private company.)

Incorporated, July 15, 1918. - - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—His Honour Sir John Strathearn Hendrie, Knight Commander of the Most Distinguished Order of Saint Michael and Saint George, Lieutenant-Governor of the Province of Ontario; William Hendrie, and George Muir Hendrie, esquires; Theodore Milner Poulter, accountant, and Herbert Ambrose, barrister-at-law; of Hamilton, Ont.

First or Provisional Directors.—John Strathern Hendrie, William Hendrie, George Muir Hendrie and Theodore Milner Poulter.

Chief place of Business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 1302, *Canada Gazette*, 1918-19.

"WINDSOR FERRY COMPANY, LIMITED."

Incorporated, July 15, 1918. - - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Oscar Ernest Fleming, Arthur Bertram Drake, and Anson Hainsworth Foster, barristers-at-law; Frederick Mortimer Allworth, manager, and James Alexander Young, accountant; all of Windsor, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Windsor, Ont.

Objects of the Company.—*Vide* p. 372, *Canada Gazette*, 1918-19.

"CHARLES LANDAU & COMPANY, LIMITED."

(As a private company.

Incorporated, July 16, 1918. - - - - - - - - - Amount of capital stock, $25,000. Number of shares, 250.—Amount of each share, $100.

Corporate Members.—Frederick Henry Markey, and Waldo Whittier Skinner, both of His Majesty's Counsel learned-in-the-law; George Gordon Hyde, advocate; Ronald Cameron Grant; accountant; and Christina Macallum Palliser, secretary; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 369, *Canada Gazette*, 1918-19.

"BEAVER ENGINEERING COMPANY, LIMITED."

Incorporated, July 16, 1918. - - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Thomas Stansfield Worthington, mechanical engineer, Harry Gordon Stewart, electrical engineer, Paul Ranger, law student, Sarah Epstein, stenographer, and Louis Gosselin, King's Counsel, all of Montreal, Que.

First or Provisional Directors.—Thomas Stansfield Worthington, Harry Gordon Stewart, and Paul Ranger.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 376, *Canada Gazette*, 1918-19.

"E. J. BAWLF GRAIN COMPANY, LIMITED."

Incorporated July 17, 1918. - - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Edward John Bawlf, grain merchant; Philip Yates, superintendent; George Joseph McLean, secretary treasurer; Albert Thompson, clerk; and Frederick Lomax Monks, accountant; all of Winnipeg, Man.

First or Provisional Directors.—Edward John Bawlf, Philip Yates and George Joseph McLean.

Chief place of Business.—Winnipeg, Man.

Objects of the Company.—*Vide* p. 375, *Canada Gazette*, 1918-19.

"SIEMS CAREY KERBAUGH, LIMITED."

Incorporated July 17, 1918. - - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Frederick Maxwell Burbidge and David Lorne Bastedo, barristers-at-law; Robert William Killey, conveyancing clerk; Doris Guise, stenographer; and Allan Bronfman, student-at-law; all of Winnipeg, Man.

First or Provisional Directors.—Frederick Maxwell Burbidge, David Lorne Bastedo and Robert William Killey.

Chief place of Business.—Winnipeg, Man.

Objects of the Company.—*Vide* p. 374, *Canada Gazette*, 1918-19.

"DOMINION REFRACTORIES COMPANY, LIMITED."

Incorporated July 17, 1918. - - - - - - - - - Amount of capital stock, $250,000. Number of shares, 2,500.—Amount of each share, $100.

Corporate Members.—Leon Daoust and Aimé Daoust, clerks; and Annie McPartlin, Jessie May Allan, and Jaqueline Elmslie, stenographers; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 372, *Canada Gazette*, 1918-19.

"STEAM NAVIGATION COMPANY OF CANADA, LIMITED."

Incorporated July 17, 1918. - - - - - - - - - Amount of capital stock, $2,500,000. Number of shares, 25,000.—Amount of each share, $100.

Corporate Members.—Charles Arthur Sara, manager; Frederick Henry Markey, King's Counsel; Ronald Cameron Grant, accountant; Frank Joseph McGarigle, secretary and Claire Marion Greaves, clerk; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 368, *Canada Gazette*, 1918-19.

"STANDARD SHIPPING COMPANY, LIMITED."

(As a private company.)

Incorporated July 17, 1918. - - - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Frederick Henry Markey and Waldo Whittier Skinner, both of His Majesty's Counsel learned-in-the-law; George Gordon Hyde, advocate; Ronald Cameron Grant, accountant; and Christina Macallum Palliser, secretary; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 371, *Canada Gazette*, 1918-19.

"BAWLF CARTAGE, LIMITED."

Incorporated July 17, 1918. - - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Edward John Bawlf, grain merchant; Philip Yates, superintendent; George Joseph McLean, secretary treasurer; Albert Thompson, clerk; and Frederick Lomax Monks, accountant; all of Winnipeg, Man.

First or Provisional Directors.—Edward John Bawlf, Philip Yates and George Joseph McLean.

Chief place of Business.—Winnipeg, Man.

Objects of the Company.—*Vide* p. 377, *Canada Gazette,* 1918-19.

"IDEAL FENCE AND SPRING COMPANY OF CANADA, LIMITED."

Incorporated July 18, 1918. - - - - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—Gordon Morton McGregor, manufacturer; William Donald McGregor, automobile dealer, both of Windsor, Ont.; William Anderson Leitch, of Walkerville, Ont., manufacturer; Frank Wadsworth Prentice and William Howard Burnham, manufacturers, both of Adrien, Mich., U.S.A.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Windsor, Ont.

Objects of the Company.—*Vide* p. 373, *Canada Gazette,* 1918-19.

"EDWARD POLLAK COMPANY, LIMITED."

Incorporated July 18, 1918. - - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Peter Bercovitch, King's Counsel, Ernest Lafontaine, and Nathan Gordon, advocates; James Johnston, accountant; and Margaret McMartin, clerk; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 382, *Canada Gazette,* 1918-19.

"BEAVER RECREATIONS, LIMITED."

Incorporated July 19, 1918. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 50,000.—Amount of each share, $1.

Corporate Members.—Charles Edward Ireson, manager; James Hoyle, book-keeper; Edward Taylor Ireson, civil engineer; Stephen Wellesley Burns, solicitor; and Annie Jane Ireson, housewife, all of Toronto, Ont.

First or Provisional Directors.—Charles Edward Ireson, James Hoyle and Edward Taylor Ireson.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 375, *Canada Gazette,* 1918-19.

"THE I.T.S. RUBBER COMPANY OF CANADA, LIMITED."

Incorporated July 19, 1918. - - - - - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Alfred William Briggs, Ernest Macaulay Dillon, and Ray Thornley Birks, barristers-at-law; Ethel Louise Helen Scott, accountant; and Mona Belle Banks, stenographer; all of Toronto, Ont.

First or Provisional Directors.—Alfred William Briggs, Ernest Macaulay Dillon and Ray Thornley Birks.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 377, *Canada Gazette,* 1918-19.

Supplementary Letters Patent, issued July 22, 1918, to

"CHONTALES MINES, LIMITED."

Decreasing the Capital Stock of the said company from the sum of $700,000 to the sum of $459,375, such decreased capital stock to consist of 91,875 shares of $5 each.

Vide p. 488, *Canada Gazette*, 1918-19

Supplementary Letters Patent issued July 23, 1918, to

"OPPENHEIMER CASING CO., OF CANADA, LIMITED."

Increasing the capital stock of the said company from the sum of $5,000 to the sum of $20,000, being an addition of 150 shares of $100 each to the present capital stock. *Vide* p. 488, *Canada Gazette*, 1918-19.

(re-incorporation)

"HOOTON CHOCOLATE COMPANY, LIMITED."

Incorporated, July 24, 1918. - - - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—John Leonard Thorne and Gustavus Mansen Mulholland, accountants; and Angus McKenzie Dewar, Edgar Fraser Raney, and Alexander Mills, solicitors; all of Toronto, Ont.

First or Provisional Directors.—Angus McKenzie Dewar, Edgar Fraser Raney and Alexander Mills.

Chief place of Business.—Toronto, Ont.

Object of the Company.—*Vide* p. 486, *Canada Gazette*, 1918-19.

"THE INGERSOLL MACHINE COMPANY, LIMITED."

Incorporated, July 24, 1918. - - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Louis Athanase David and Louis Philippe Crepeau, both of His Majesty's Counsel learned-in-the-law; Segfried Hinson Read Bush, advocate; George Whittaker, accountant; and John Parker Callaghan, student-at-law; all of Montreal, Que.

First or Provisional Directors.—Louis Philippe Crepeau, Segfried Hinson Read Bush and George Whittaker.

Chief place of Business.—Montreal, Que.

Objects of the Company.—Vide p. 486, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued July 24, 1918 to

"THE ONTARIO GRAPHITE COMPANY, LIMITED."

(1) Increasing the capital stock of the said company from the sum of $200,000 to the sum of $300,000 being an addition of 1,000 shares of $100 each to the present capital stock. (2) changing the corporate name to that of "Black Donald Graphite Company, Limited," and (3) extending the powers of the said company. *Vide* p. 488, *Canada Gazette*, 1918-19.

"MAID OF THE MIST STEAMBOAT COMPANY, LIMITED."

Incorporated, July 25, 1918. - - - - - - - - - Amount of capital stock, $5,000. Number of shares, 500.—Amount of each share, $10.

Corporate Members.—William Matthew Thomas, of Niagara Falls, Ont., marine captain; Frank LeBlond, of Buffalo, N.Y., U.S.A., bookkeeper; Ann E. Rae and Frederick Hans Krull, bankers, and William Henry Cookman, manager, of Niagara Falls, N.Y., U.S.A.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Niagara Falls, Ont.

Objects of the Company.—*Vide* p. 488; *Canada Gazette*, 1918-19.

"THE CAMPBELL HOWARD MACHINE COMPANY, LIMITED."

(as a Private Company)

Incorporated, July 26, 1918. - - - - - - - - Amount of capital stock, $650,000. Number of shares, 6,500.—Amount of each share, $100.

Corporate Members.—John Thomas Hackett, and Felix Winfield Hackett, advocates; Jules Bruneau, student-at-law; and Clara Thomas, and Margaret Teresa Darragh, stenographers; all of Montreal, Que.

First or Provisional Directors.—John Thomas Hackett, Jules Bruneau and Clara Thomas.

Chief place of Business.—Sherbrooke, Que.

Objects of the Company.—*Vide* p. 484, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued July 29, 1918, to

"THE PARKER PULPWOOD & TIMBER COMPANY, LIMITED."

(1) Increasing the capital stock of the said company from the sum of $49,000 to the sum of $200,000 being an addition of 1,510 shares of $100 each to the present capital stock, and (2) changing the corporate name to that of "Continental Wood Products Company Limited."

Vide p. 1120, *Canada Gazette*, 1918-19.

"THE TRIUNE GOLD & SILVER MINING & MANUFACTURING COMPANY, LIMITED."

Incorporated June 29, 1918 - - - - - - -Amount of capital stock, $300,000. Number of shares, 300,000.—Amount of each share, $1.

Corporate Members.—Richard Hoag Battey, mine manager, of Ferguson, B.C.; Silas Shipman Trickey and Henry Hendrickson Oberg, farmers of Alvarado, Minn., U.S.A.; John Gustaf Lindgren, capitalist, of Hallock, Minn., U.S.A.; Thomas Day Winter, farmer, of Northcote, Minn., U.S.A.; George Curtis Nunn, merchant, of Detroit, Minn., U.S.A.; and Thorwald Froslee, merchant, of Vining, Minn., U.S.A.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Ferguson, B.C.

Objects of the Company.—*Vide* p. 378, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued July 29, 1918, to

"BRUNNER MOND, CANADA, LIMITED."

Increasing the capital stock of the said company from the sum of $3,000,000 to the sum of $5,000,000, being an addition of 20,000 shares of $100 each to the present capital stock.

Vide p. 488, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued July 29, 1918, to

"MIDDLESEX MILLS, LIMITED."

Increasing the capital stock of the said company from the sum of $250,000 to the sum of $350,000, being an addition of 1,000 shares of $100 each to the present capital stock.

Vide p. 488, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued July 30, 1918, to

"THE HOLEPROOF HOSIERY COMPANY OF CANADA, LIMITED."

Increasing the capital stock of the said company from the sum of $50,000 to the sum of $350,000, being an addition of 3,000 shares of $100 each to the present capital stock.

Vide p. 587, *Canada Gazette*, 1918-19.

"P. POULIN & CIE, LIMITEE."

Incorporated August 1, 1918. - - - - - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Frédéric Emile Audet, notary; Richard Weiss, manufacturer; Ernest Dorval, manufacturers' agent; Joseph Emile Coté, accountant and Charles Auguste Honoré Bertrand, advocate; all of Montreal, Que.

First or Provisional Directors.—Frédéric Emile Audet, Joseph Emile Coté and Charles Auguste Honoré Bertrand.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 638, *Canada Gazette*, 1918-19.

"EASTERN PULP COMPANY OF CANADA, LIMITED."

Incorporated August 1, 1918. - - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Gerald Augustine Coughlin, advocate; Francis George Bush, bookkeeper; George Robert Drennan, stenographer; Michael Joseph O'Brien, clerk; and Charles Alderic Laurendeau, student; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 682, *Canada Gazette*, 1918-19.

"W. FORBES ALLOWAY, LIMITED."

(As a private company.)

Incorporated August 1, 1918. - - - - - - - - - Amount of capital stock, $25,000. Number of shares, 250.—Amount of each share, $100.

Corporate Members.—John Thomas Hackett, and Felix Winfield Hackett, advocates; Jules Bruneau, student-at-law; and Clara Thomas and Margaret Teresa Darragh, stenographers; all of Montreal, Que.

First or Provisional Directors.—John Thomas Hackett, Jules Bruneau and Clara Thomas.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 589, *Canada Gazette*, 1918-19.

"S. LENNARD & SONS, LIMITED."

Incorporated August 2, 1918. - - - - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—Samuel Joseph Lennard, Harry Lennard, Frank Exton Lennard, Sr., and Frank Exton Lennard, Jr., manufacturers, all of Dundas Ont.; and Emma Lennard, of Cleveland, Ohio, U.S.A., spinster.

First or Provisional Directors.—Samuel Joseph Lennard, Harry Lennard and Frank Exton Lennard, Sr.

Chief place of Business.—Dundas, Ont.

Objects of the Company.—*Vide* p. 587, *Canada Gazette,* 1918-19.

"THE NOVA SCOTIA TRANSPORTATION COMPANY, LIMITED."

(As a private company.)

Incorporated August 3, 1918. - - - - - - - - - Amount of capital stock, $5,000. Number of shares, 1,000.—Without nominal or par value.

Corporate Members.—Arthur Carson McMaster, of Toronto, Ont., barrister-at-law; Alice McIntosh, Hazel Caroline Perkins, Bertha Aurelia Farley, and Myrtle Irene Perkins, stenographers; all of Ottawa, Ont.

First or Provisional Directors.—Arthur Carson McMaster, Alice McIntosh and Hazel Caroline Perkins.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 588, *Canada Gazette,* 1918-19.

"LA COMPAGNIE DE TABAC FERMENTE, LIMITEE."

Incorporated August 3, 1918. - - - - - - - - - Amount of capital stock, $25,000. Number of shares, 250.—Amount of each share, $100.

Corporate Members.—John Henry Duys, merchant, of New York, N.Y., U.S.A.; Edmond Narcisse Cusson, manager; Joseph Arthur Couture, notary; Wilfrid Deschenes and Aimé Malo, students; all of Montreal, Que.

First or Provisional Directors.—Edmond Narcisse Cusson, Joseph Arthur Couture and Wilfrid Deschenes.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 679, *Canada Gazette,* 1918-19.

Supplementary Letters Patent, issued August 3, 1918, to

"HAMILTON DISTILLERY COMPANY, (Limited) and Reduced.

Decreasing the capital stock of the said company from the sum of $500,000 to the sum of $300,000, such decreased capital stock to consist of 6,000 shares of $50 each. *Vide* p. 687, *Canada Gazette,* 1918-19.

"THE MAPLE LEAF SHIPPING COMPANY, LIMITED."

(As a private company.)

Incorporated August 3, 1918. - - - - - - - - - Amount of capital stock, $5,000. Number of shares, 1,000.—Without nominal or par value.

Corporate Members.—Arthur Carson McMaster, of Toronto, Ont., barrister-at-law; Alice McIntosh, Hazel Caroline Perkins, Bertha Aurelia Farley, and Myrtle Irene Perkins, stenographers; all of Ottawa, Ont.

First or Provisional Directors.—Arthur Carson McMaster, Alice McIntosh and Hazel Caroline Perkins.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 586, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued August 3, 1918, to

"THE GRAIN GROWERS EXPORT COMPANY, LIMITED."

Decreasing the capital stock of the said company from the sum of $1,500,000 to the sum of $1,200,000, such decreased capital stock to consist of 12,000 shares of $100 each.

Vide p. 686, *Canada Gazette*, 1918-19.

"DUYS CANADIAN TOBACCO COMPANY, LIMITED."

Incorporated August 3, 1918. - - - - - - - Amount of capital stock, $130,000. Number of shares, 1,300.—Amount of each share, $100.

Corporate Members.—John Henry Duys, merchant, of New York, N.Y., U.S.A.; Edmond Narcisse Cusson, manager, Joseph Arthur Couture, notary, Wilfrid Deschenes and Aimé Malo, students, all of Montreal, Que.

First or Provisional Directors.—Edmond Narcisse Cusson, Joseph Arthur Couture and Wilfrid Deschenes.

Chief place of Business.—Montreal, Que.

Object of the Company.—*Vide* p. 680, *Canada Gazette*, 1918-19.

(re-incorporation)

"THE EMPIRE PAPER BOX COMPANY, LIMITED."

Incorporated August 3, 1918. - - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—James Roy Gordon, merchant, James Harvey Roy, Thomas James Rodger, George Nelson Brooks, and Thomas Meikle Barrington, manufacturers, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 681, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued August 3, 1918, to

"BENNETT MARTIN ASBESTOS AND CHROME MINES, LIMITED."

Increasing the capital stock of the said company from the sum of $1,500,000 to the sum of $10,000,000 being an addition of 85,000 shares of $100 each to the present capital stock.

Vide p. 686, *Canada Gazette*, 1918-19.

"CAPREOL TOWNSITE, LIMITED."

(as a Private Company.)

Incorporated August 6, 1918. - - - - - - - - Amount of capital stock, $90,000. Number of shares, 900.—Amount of each share, $100.

Corporate Members.—Gerard Ruel, barrister-at-law; Alfred James Mitchell, comptroller; Robert George Osborne Thomson, railway official; David McKechnie Ford, auditor; Agnes Eileen Daly, stenographer; George Norman Limpricht, recording officer, and Williamm Bowler, secretary, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 684, *Canada Gazette*, 1918-19.

"MONTREAL CEREAL AND MILLING LIMITED."

Incorporated August 6, 1918. - - - - - - - - Amount of capital stock, $600,000. Number of shares, 60,000.—Amount of each share, $10.

Corporate Members.—Joseph Sanche and Stanislas Leblanc, petitioners; Louis Napoléon Paul and Alphonse Paul, accountants; and Evariste Sanche, baker, all of Montreal, Que.

First or Provisional Directors.—Joseph Sanche, Stanislas Leblanc and Louis Napoleon Paul.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 637, *Canada Gazette*, 1918-19.

"BELCHER'S ISLANDS IRON MINES, LIMITED."

Incorporated August 7, 1918. - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 1,000,000.—Amount of each share, $1.

Corporate Members.—Thomas Neville Poole, law clerk; Arthur Lorne Lillico, and Charles Evans-Lewis, barristers-at-law; Nellie Halliday Lillico, married woman, and Irene Olga Allan, book-keeper, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 679, *Canada Gazette*, 1918-19.

"W. J. ARMSTRONG, LIMITED."

Incorporated August 7, 1918. - - - - - - - - Amount of capital stock, $50,000, Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Charles Lawrence Dunbar, Leo William Goetz, Richard Dalton Walter, esquires; John Sutherland, Jr., insurance agent, and Mary Katherine Macdonald, student-at-law; all of Guelph, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Guelph, Ont.

Objects of the Company.—*Vide* p. 683, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued August 8, 1918, to

"GLOBE ELECTRIC COMPANY OF CANADA, LIMITED,"

Changing the corporate name of the said company to that of

"GLOBELITE BATTERY COMPANY, LIMITED"

Vide p. 686, *Canada Gazette*, 1918-19.

"WILCOCK'S, LIMITED."

Incorporated August 8, 1918 - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Henry Johnston Elliott and Louis Athanase David, both of His Majesty's Counsel learned-in-the-law; George Whittaker, accountant, and John Parker Callaghan, and Benjamin Robinson, students-at-law; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 682, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued August 8, 1918, to
"LUNDY SCOTT, LIMITED,"
Changing the corporate name of the said company to that of
"A. B. SCOTT, LIMITED."
Vide p. 785, *Canada Gazette*, 1918-19.

"ANGLO-AMERICAN AGENCIES, LIMITED."

(As a Private Company.)

Incorporated, August 9, 1918. - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Gustavus Henry Rainville and Andrew Chadwick Hersey, manufacturer's agents, Stephens Hubert Wiggett, sales manager, Frederick George Reid, insurance broker, and Lena Quintin, secretary, all of Montreal, Que.
First or Provisional Directors.—Gustavus Henry Rainville, Andrew Chadwick Hersey and Stephens Hubert Wiggett.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 778, *Canada Gazette*, 1918-19.

"ELECTRICS, LIMITED."

(As a Private Company.)

Incorporated, August 10, 1918. - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Gustavus Henry Rainville, manufacturers' agent; Charles Bertrand Walsh, typewriter agent, Stephen Hubert Wiggett, sales manager, Frederick George Reid, insurance broker, and Lena Quintin, secretary, all of Montreal, Que.
First or Provisional Directors.—Gustavus Henry Rainville, Stephen Hubert Wiggett and Lena Quintin.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 780, *Canada Gazette*, 1918-19.

"CIE CHATELET, LIMITEE."

Incorporated, August 10, 1918. - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Joseph Patrick Walsh, advocate, Charles Joseph McLaughlin, student-at-law; Gladys Louise Lee and Millicent Dewar, stenographers, Ella Edith Purvis, bookkeeper, all of Toronto, Ont.
First or Provisional Directors.—Joseph Patrick Walsh, Charles Joseph McLaughlin and Millicent Dewar.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 826, *Canada Gazette*, 1918-19.

"MIZROCHI ZIONIST CONFEDERATION OF CANADA."

(Association.)

Incorporated, August 12, 1918. - - - - - - - - - - - - Without share capital.

Corporate Members.—Semoul Levin, Jacob Goldblath, Reuben Levy, and Simon Hershman, merchants, and Jacob Levinson, minister, all of Hamilton, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Hamilton, Ont.
Objects of the Company.—*Vide* p. 780, *Canada Gazette*, 1918-19.

"WINNIPEG PIANO COMPANY, LIMITED."

Incorporated August 12, 1918. - - - - Amount of capital stock, $600,000. Number of shares, 6,000.—Amount of each share, $100.

Corporate Members.—Arthur Ernest Grassby, William Alexander Smith, piano merchants; Frederick William Louthood, and Reginald Edwin Forde, accountants; and Thomas Ernest Meredith, clerk, all of Winnipeg, Man.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Winnipeg, Man.

Objects of the Company.—*Vide* p. 784, *Canada Gazette,* 1918-19.

"RIORDON SALES COMPANY, LIMITED."

Incorporated August 12, 1918. - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Carl Riordon, manufacturer; Lawrence Macfarlane, advocate and King's Counsel; John MacNaughton, advocate, James Geary Cartwright, office manager, all of Montreal, Que., and Frederick Ballantyne Whittet, of Westmount, Que., secretary-treasurer.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 783, *Canada Gazette,* 1918-19.

"LAFAYETTE STEAMSHIP COMPANY, LIMITED."

Incorporated August 13, 1918. - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—George Vipond Cousins, Egbert William Westover, advocates, and Rosalind Stuart, stenographer, of Montreal, Que.; Charles Mackay Cotton, and Frederick Thomas Enright, of Westmount, Que., advocates.

First or Provisional Directors.—George Vipond Cousins, Rosalind Stuart, and Charles Mackay Cotton.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 782, *Canada Gazette,* 1918-19.

"AIRO RUBBER, LIMITED."

Incorporated August 13, 1918. - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Eugène Sansregret, grocer, Joseph Latreille, Joseph Edmond Sansregret, gentlemen; Joseph Charles Petitclerc, civil servant, all of Montreal, Que.; and Olivier Deschamps, business agent, of Longueuil, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 827, *Canada Gazette,* 1918-19.

"AMERICAN PURCHASING CORPORATION, LIMITED.

Incorporated August 13, 1918. - - - - - - - - Amount of capital stock, $5,000,000. Number of shares, 50,000.—Amount of each share, $100.

Corporate Members.—Harold Wilson Shapley and Archibald Woodburn Langmuir, barristers; William Alfred James Case, solicitor; Suneva Margaret Fordyce, secretary, and George Evans Atwood, accountant, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 776, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued August 15, 1918, to

"CHONTALES MINES, LIMITED."

Increasing the capital stock of the said company from the sum of $459,375 to the sum of $700,000, being an addition of 48,125 shares of $5 each, to the present capital stock.

Vide p. 785, *Canada Gazette*, 1918-19.

"CANADIAN ODORLESS DISINFECTANT COMPANY, LIMITED."

Incorporated August 15, 1918. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Thomas Hubert Wilson and Jacob William Broudy, barristers at law; John Richards, builder; William Ralph Bird, broker, and Mary McQuillan, stenographer, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 782, *Canada Gazette*, 1918-19.

"SAUNDERS-ALBERTA COLLIERIES, LIMITED."

Incorporated August 15, 1918. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—George Henry Kilmer, Henry Hague Davis, Howard Vernon Hearst and Wilfrid Maynard Cox, solicitors, and Nellie Boynes, book-keeper, all of Toronto, Ont.

First or Provisional Directors.—George Henry Kilmer, Henry Hague Davis and Howard Vernon Hearst.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 777, *Canada Gazette*, 1918-19.

"CANADIAN DUPLEXALITE COMPANY, LIMITED."

Incorporated August 16, 1918. - - - - - - Amount of capital stock, $150,000. Number of shares, 1,500.—Amount of each share, $100.

Corporate Members.—Richard Tuson Heneker and Henry Noel Chauvin, both of His Majesty's Counsel learned-in-the-law; James Edouard Coulin, advocate, and Hugh Wylie, accountant, all of Montreal, Que.; Christina Imrie, of Westmount, Que., clerk.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 949, *Canada Gazette*, 1918-19.

"CANADIAN FARM PRODUCTS."

(Association.)

Incorporated, August 16, 1918.—Without share capital.

Corporate Members.—Reverend Peter Celestine Gauthier, of St. Louis, P.E.I., parish priest; Albert Schurman, of Central Bedeque, P.E.I., farmer; Reverend Peter Paul Arsenault, of Mount Carmel, P.E.I., parish priest; Preston Linkletter Campbell, of Montague, P.E.I., farmer; John Bradford Millman, of Long River, P.E.I., farmer; Reverend John James McDonald, Kinkora, P.E.I., parish priest; Joseph Daniel McLellan, of Richmond, P.E.I., farmer; Bertram Robert Brown, of York, P.E.I., farmer; and Thomas Edward Bulpitt, of Cardigan, P.E.I., farmer.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Charlottetown, P.E.I.

Objects of the Company.—*Vide* p. 1031, *Canada Gazette*, 1918-19.

"CANADA CHEMICAL WORKS COMPANY, LIMITED."

"LES USINES CHIMIQUES DU CANADA, LIMITEE."

Incorporated, August 16, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Raoul Ovide Grothé, manufacturer; Joseph Ernest Provost, and Hector Frédéric Fortier, managers; Arthur Jovite Drouin, chemist, and Carolus Fortier, chemical-engineer; all of Montreal, Que.

First or Provisional Directors.—Joseph Ernest Provost, Hector Frédéric Fortier, and Arthur Jovite Drouin.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 829, *Canada Gazette*, 1918-19.

"THE FLEXNER-TAYLOR COMPANY OF CANADA, LIMITED."

Incorporated, August 17, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Walter Seely Johnson, advocate; William Smith Wilson, and Thomas Mansfield Turner, accountants; Rhoda Mary Husband, and Gertrude Susan O'Brien, secretaries, all of Montreal, Que.

First or Provisional Directors.—Walter Seely Johnson, William Smith Wilson and Rhoda Mary Husband.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 783, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued August 19, 1918, to

"N. M. PATTERSON & COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $400,000 to the sum of $2,000,000, being an addition of 16,000 shares of $100 each to the present capital stock.

Vide p. 874, *Canada Gazette*, 1918-19.

"CONTAINERS, LIMITED."

Incorporated August 20, 1918. - - - Amount of capital stock, $150,000. Number of shares, 1,500.—Amount of each share, $100.

Corporate Members.—Edward John Swift and John Thomas Adams, accountants, Edith Grace Gore, bookkeeper, Hazel Loveys and Kathleen McGuire, stenographers, and Rupert Kenneth Grimshaw and Melville Delos Grimshaw, contractors, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 871, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued August 20, 1918, to

"THE STANDARD PAINT COMPANY OF CANADA, LIMITED."

Increasing the capital stock of the said company from the sum of $150,000 to the sum of $500,000, being an addition of 3,500 shares of $100 each to the present capital stock.

Vide p. 874, *Canada Gazette*, 1918-19.

"ASCANIA SALVAGE COMPANY, LIMITED."

(As a private company.)

Incorporated August 21, 1918. - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—Frederick Henry Markey and Waldo Whittier Skinner, both of His Majesty's Counsel learned-in-the-law; George Gordon Hyde, advocate, Ronald Cameron Grant, accountant, and William McElligott, secretary, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 873, *Canada Gazette*, 1918-19.

"THE BRITISH SMELTING & REFINING COMPANY, LIMITED."

Incorporated, August 21, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Lyon Levine, student-at-law; Sarah Miller, and Elsie Bramson, stenographers; Edson Grenfel Place, advocate, and George Wilton Rowell, accountant; all of Montreal, Que.

First or Provisional Directors.—Lyon Levine, Sarah Miller and Elsie Bramson.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 873, *Canada Gazette*, 1918-19.

Supplementary Letters Patent, issued August 21, 1918, to

"THE LAKE ST. LOUIS LAND COMPANY, LIMITED, AND REDUCED."

Decreasing the capital stock of the said company from the sum of $100,000 to the sum of $38,340 such decreased capital stock to consist of 852 shares of $45 each.

Vide p. 952, *Canada Gazette*, 1918-19.

"EXHIBITORS DISTRIBUTING CORPORATION, LIMITED."

(As a private company.)

Incorporated, August 21, 1918. - - - - - - - Amount of capital stock, $30,000. Number of shares, 300.—Amount of each share, $100.

Corporate Members.—Arthur Cohen, barrister-at-law; Elly Marks, merchant; Wilfrid Field, student-at-law; Annie Redpath and Lily Harwood, stenographers; all of Toronto, Ont.

First or Provisional Directors.—Arthur Cohen, Elly Marks and Wilfrid Field.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 872, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued August 22, 1918, to

"CEDARS RAPIDS TRANSMISSION COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $200,000 to the sum of $1,000,000 being an addition of 8,000 shares of $100 each to the present capital stock.

Vide p. 874, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued August 22, 1918, to

"FACTORY SITES, LIMITED."

Increasing the Capital Stock of the said company from the sum of $200,000 to the sum of $300,000, being an addition of 1,000 shares of $100 each to the present Capital Stock.

Vide p. 874, *Canada Gazette*, 1918-19.

"F. E. SMITH, LIMITED."

Incorporated, August 26, 1918 - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—George Vipond Cousins, and Egbert William Westover, advocates; Isabella Stewart Macfarlane, stenographer; all of Montreal, Que.; Charles Mackay Cotton and Frederick Thomas Enright, advocates, both of Westmount, Que.

First or Provisional Directors.—George Vipond Cousins, Isabella Stewart Macfarlane, and Charles Mackay Cotton.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1028, *Canada Gazette*, 1918-19.

"ROSEDALE COAL COMPANY, LIMITED."

Incorporated, August 28, 1918 - - - - - Amount of capital stock, $1,500,000. Number of shares, 15,000.—Amount of each share, $100.

Corporate Members.—Robert George Osborne Thomson, vice-president; Harold Stephen Gausby, secretary; George Levack Mowat, accountant; Charles Durno Cowie, chief clerk; Frederick McNamee Little, auditor; Peter Chalmers, cashier; and George Norman Limpricht, draughtsman, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 951, *Canada Gazette*, 1918-19.

"REID EAST COAST SALVAGE COMPANY, LIMITED."

(As a private company.)

Incorporated, August 28, 1918 - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share $100.

Corporate Members.—Frederick Henry Markey, of His Majesty's Counsel learned-in-the-law; George Gordon Hyde, and John Gerard Ahern, advocates; Ronald Cameron Grant, accountant; and William McElligott, secretary, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Halifax, N.S.

Objects of the Company.—*Vide* p. 947, *Canada Gazette*, 1918-19.

"JAMES M. AIRD, LIMITED."

Incorporated August 28, 1918. - - - - - Amount of capital stock, $750,000. Number of shares, 7,500.—Amount of each share, $100.

Corporate Members.—James Mundell Aird, James Jameson Aird and William Robert Aird, merchants; Maria Louisa Jameson, wife of James Mundell Aird, and Florence Maria Aird, wife of Frederick Woollven, all of Westmount, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 950, *Canada Gazette*, 1918-19.

"HENRIETTE SHIP COMPANY, LIMITED."

(As a private company.)

Incorporated August 29, 1918. - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—James Hill Lawson, Stanley James Richard Remnant, James Chisholm Ralston, David Gordon Marshall and John Silas Wynn Pugh, all of Vancouver, B.C., barristers.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Vancouver, B.C.

Objects of the Company.—*Vide* p. 915, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued September 3, 1918, to

"HAMILTON DISTILLERY COMPANY, LIMITED, and Reduced.

Decreasing the capital stock of the said company from the sum of $300,000 to the sum of $140,000, such decreased capital stock to consist of 14,000 shares of $10 each. *Vide* p. 1032 *Canada Gazette,* 1918-19.

"CANADIAN FEED MANUFACTURING COMPANY, LIMITED."

Incorporated September 4, 1918. - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—John Russell Smith, Harry J. Sterling and George Gustave Riegger, grain merchants; Frederick Royden Morris, barrister at law, and Mabel Mary Parish, stenographer, all of Fort William, Ont.

First or Provisional Directors.—John Russell Smith, Harry J. Sterling and George Gustave Riegger.

Chief place of Business.—Fort William, Ont.

Objects of the Company.—*Vide* p. 1205, *Canada Gazette,* 1918-19.

"SWIFTSURE STEAMSHIP LINES, LIMITED."

(As a private company.)

Incorporated, September 4, 1918. - - - Amount of capital stock, $24,000. Number of shares, 1,000.—Amount of each share, without nominal or par value.

Corporate Members.—Thomas Robinson and Minnie Blumenthal, secretaries, Abe Jack Gutreich and William John Ryan, accountants, and Alice Anna Rohrig, stenographer, all of New York, in the State of New York, U.S.A.

First or Provisional Directors.—Thomas Robinson, Abe Jack Gutreich and William John Ryan.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1024, *Canada Gazette,* 1918-19.

"THE INTERPROVINCIAL UNITED FARMERS UNION OF CANADA."
"L'UNION INTERPROVINCIALE DES CULTIVATEURS UNIS DU CANADA."

(*Association, without share capital.*)

Incorporated, September 4, 1918.

Corporate Members.—Seraphin Larose, James Smith and John Patrick McNamara, of Masson, Que., farmers; James Peter Brady, of Bassin du Lievre, Que., farmer; Jean Baptiste Chenier, Louis Mondoux and Thomas Maloney, of Thurso, Que., farmers; and John Peter McLachlan, Percy Campbell and John Cecil McCallum, of Lochaber Bay, Que., farmers.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Masson, Que.

Objects of the Company.—*Vide* p. 1029, *Canada Gazette,* 1918-19.

"DOMINION FLAX, LIMITED."

Incorporated, September 6, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John Wellington Pickup, Norman Stuart Caudwell, barristers-at-law; Duncan Angus McCrimmon, accountant; Ruth Hewitt Boyd, clerk, and Ella Phippen Hall, stenographer, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 1031, *Canada Gazette*, 1918-19.

"CAN BEC, LIMITED."

Incorporated, September 6, 1918. - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Edmond Brossard, King's Counsel; Alfred Forest and Arthur Lalonde, advocates; Joseph Louis Girouard, notary public, and George Ludger L'Heureux, accountant, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1026, *Canada Gazette*, 1918-19.

"THE YARKER MANUFACTURING COMPANY, LIMITED."

Incorporated, September 6, 1918. - - - - - - - Amount of capital stock, $250,000. Number of shares, 2,500.—Amount of each share, $100.

Corporate Members.—Honourable Clive Pringle, Senator of the Dominion of Canada; Norman Gregor Guthrie, solicitor; Ruby Blake, clerk; William Samuel McCauley and George Gordon Connell, accountant, all of Ottawa, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Yarker, Ont.
Objects of the Company.—*Vide* p. 1023, *Canada Gazette*, 1918-19.

"B. FRIEDMAN, LIMITED."

Incorporated, September 6, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 50,000.—Amount of each share, $1.

Corporate Members.—Benjamin Friedman, agent; Harry Friedman and Moses Isaac Lieberman, barristers; Samuel Waldman, merchant, and William Volansky, wholesale merchant, all of Edmonton, Alta.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Edmonton, Alta.
Objects of the Company.—*Vide* p. 1029, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued September 10, 1918, to

"THE ST. MAURICE RIVER BOOM AND DRIVING COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $25,000 to the sum of $49,000, being an addition of 240 shares of $100 each to the present capital stock.

Vide p. 1119, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"CANADIAN PATENT HAT LINING COMPANY, LIMITED."

(As a private company.)

Incorporated September 11, 1918.- - - - - - - Amount of capital stock, $20,000. Number of shares, 2,000—Amount of each share, $10.

Corporate Members.—Maxwell Goldstein, King's Counsel; Max Bernfeld, advocate; and James Burnett Taylor, accountant, both of Montreal, Que.; David Ellsworth Loveland, and Charles Danciger, of New York, N.Y., U.S.A., manufacturers.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1119, *Canada Gazette*, 1918-19.

"THE PARIS STORE, LIMITED."

Incorporated September 11, 1918. - - - - - Amount of capital stock, $25,000. Number of shares, 250.—Amount of each share, $100.

Corporate Members.—George Leonard Alexander, advocate; Alexander Burnett, and Henry James Murphy, brokers; and Agnes Frances Foley, stenographer, of Montreal, Que.; Frederick Henry Manley, of Westmount, Que., broker.
First or Provisional Directors.—George Leonard Alexander, Alexander Burnett, and Henry James Murphy.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1118, *Canada Gazette*, 1918-19.

"CEDAR PRODUCTS, LIMITED."

Incorporated September 11, 1918. - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Frank Leopold Milner, and Harry Alden Purdy, barristers-at-law; Jennie Hallett Freeman, and Jeanne Morris MacKinnon, solicitor's clerks; and Margaret Ann Currie, stenographer; all of Amherst, N.S.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Amherst, N.S.
Objects of the Company.—*Vide* p. 1118, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued September 12, 1918, to

"CANADIAN PNEUMATIC TOOL COMPANY, LIMITED,"

Increasing the capital stock of the said company from the sum of $50,000 to the sum of $150,000, being an addition of 2,000 shares of $50 each to the present capital stock.

Vide p. 1119, *Canada Gazette*, 1918-19.

"TORONTO ATHLETIC CLUB, LIMITED."

Incorporated September 12, 1918. - - - - - Amount of capital stock, $50,000. Number of shares, 1,000—Amount of each share, $50.

Corporate Members.—Henry James Richmond, and Frank Bott, brokers; William Nash, and Edward Frank Farlow, managers; and Harold Webster Boughner, salesman; all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 1117, *Canada Gazette*, 1918-19.

"TRUCK TRANSPORT COMPANY, LIMITED."

Incorporated September 13, 1918. - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Reginald Holland Parmenter and Arthur John Thomson, solicitors; Samuel Davidson Fowler, solicitor's clerk; Violet Moffat, accountant, and Anna Latimer, office clerk, all of Toronto, Ont.

First or Provisional Directors.—Reginald Holland Parmenter, Arthur John Thomson, and Samuel Davidson Fowler.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1116, *Canada Gazette*, 1918-19.

"THE UNION ENGINE AND MACHINE WORKS, LIMITED."

(Reincorporation.)

Incorporated September 13, 1918. - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—Walter Robert Lorimer Shanks, advocate; Francis George Bush, book-keeper; George Robert Drennan, stenographer; Herbert William Jackson, and Michael Joseph O'Brien, clerks; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1115, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued September 13, 1918, to

"WESTERN ELECTRIC COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $7,500,000 to the sum of $10,000,000, being an addition of 25,000 shares of $100 each to the present capital stock.

Vide p. 1120, *Canada Gazette*, 1918-19.

"LA COMPAGNIE DENTAIRE MASSON, LIMITEE."

Incorporated September 14, 1918. - - - - - Amount of capital stock, $10,000. Number of shares, 100.—Amount of each share, $100.

Corporate Members.—Joseph Alfred Masson, civil servant; Joseph Laurent and Willie Quevillon, accountants; Jacques Alfred Bissonnette and Joseph Bruno Trudeau, bailiffs, all of Montreal, Que.

First or Provisional Directors.—Joseph Alfred Masson, Willie Quevillon and Jacques Alfred Bissonnette.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1250, *Canada Gazette*, 1918-19.

"PINARD, PIERRE & GRENIER, LIMITEE."

Incorporated September 16, 1918. - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Joseph Henri Pinard, merchant; Joseph Louis Alfred Grenier, commercial traveller, and William Thomas Heney, broker; all three of Outremont, Que.; Walter Pierre, commercial traveller, and Joseph Albert Pinard, merchant, both of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1251, *Canada Gazette*, 1918-19.

"THE CANADIAN SECTION OF THE DEVASTATED AISNE."

"LA SECTION CANADIENNE DE L'AISNE DEVASTEE."

(Association.)

Incorporated, September 16, 1918.—Without share capital.

Corporate Members.—Marguerite Claire Gault, Bessie Pauline Thomas, Agnes Joly de Lotbinière, and Charlotte Rosalind Macarow, married women; and Margaret Prentiss Stearns, spinster; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1115, *Canada Gazette*, 1918-19.

"CANADIAN AVIATION FUND."

(Association.)

Incorporated, September 16, 1918.—Without share capital.

Corporate Members.—Lieutenant-Colonel Henry Brock, Colonel William Hamilton Merritt, Lieutenant-Colonel James Galloway, Frederick Charles Ritchie, Esquire, and Angus Compston Heighington, barrister, all of Toronto, Ont.

First or Provisional Directors.—Lieut.-Col. Henry Brock, Col. William Hamilton Merritt, and Frederick Charles Ritchie.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1305, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued September 16, 1918, to

"THE CANADIAN NURSERY COMPANY, LIMITED."

Extending the powers of the said company.

Vide p. 1209, *Canada Gazette*, 1918-19.

"UNITED CHEESE, LIMITED."

Incorporated, September 17, 1918. - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Andrew Wentworth Hunter, Charles Henry Kemp, solicitors; George Roy Sproat, accountantant; Lorena McConnell and Laura Turner, law clerks; all of Toronto, Ont.

First or Provisional Directors.—Andrew Wentworth Hunter, Charles Henry Kemp and George Roy Sproat.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1207, *Canada Gazette*, 1918-19.

"DOMINION WINDSHIELD CLEANER CORPORATION, LIMITED."

Incorporated, September 19, 1918. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Stanley Howard Slater, barrister-at-law; George Archibald Hancock, insurance agent; Perle Wesley Springer, student-at-law; Edith May Hogan and Ella Weir, stenographers; all of Hamilton, Ont.

First or Provisional Directors.—Stanley Howard Slater, George Archibald Hancock and Perle Wesley Springer.

Chief place of Business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 1208, *Canada Gazette*, 1918-19.

"SOLDIERS' WIVES' LEAGUE."

(Association.)

Incorporated September 19, 1918. - - - - - - - - - - Without share capital.

Corporate Members.—Stella Taschereau Fiset, wife of Sir Eugene Fiset; Violet Charlotte Henderson, wife of Lt.-Colonel the Honourable H. G. Henderson; Helen Marguerite Ashton, wife of General E. C. Ashton; Jessie Williams Hughes, wife of Brigadier General William St. Pierre Hughes; Eleanor Hodgins, wife of Major-General W. E. Hodgins, and Maud Gertrude Rivers, widow, all of Ottawa, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 1385, *Canada Gazette*, 1918-19.

"ASCOT TILE & BRICK COMPANY, LIMITED."

Incorporated September 19, 1918. - - - - - - Amount of capital stock, $75,000. Number of shares, 750.—Amount of each share, $100.

Corporate Members.—Edouard Louis Darche, Francois Xavier Darche, Louis Philippe Darche, and Jean Darche, traders; all of Ascot Corner, Que.; and George Arthur Darche, of Sherbrooke, Que., gentleman.
First or Provisional Directors.—Edouard Louis Darche, Francois Xavier Darche and Louis Philippe Darche.
Chief place of Business.—Ascot Corner, Que.
Objects of the Company.—*Vide* p. 1205, *Canada Gazette*, 1918-19.

"HARGRAFT & SONS, LIMITED."

Incorporated September 20, 1918. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John Ross Hargraft, Gordon Grant Hargraft, and Alan Arthur Hargraft, merchants; Francis Harvey Snyder, solicitor; and Fenton Sneed, accountant, all of Toronto, Ont.
First or Provisional Directors.—John Ross Hargraft, Gordon Grant Hargraft and Alan Arthur Hargraft.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 1203, *Canada Gazette*, 1918-19.

"BRANTFORD COMPUTING SCALE COMPANY, LIMITED."

Incorporated September 23, 1918. - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Archibald Leonard McPherson, and Edward Cutmore, manufacturers; Dufferin Turnbull Williamson, commercial traveller; Charles Henry Herod, machinist; Frederick Henry Gott, merchant; Malcolm McGregor, and Arthur Benjamin Burnley, capitalists, all of Brantford, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Brantford, Ont.
Objects of the Company.—*Vide* p. 1206, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"CANADIAN CRUDE ASBESTOS AND FIBRE CORPORATION, LIMITED."

Incorporated, September 23, 1918. - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—Alexander Huntly Duff and Maurice Goudrault, advocates; Jean Lang Muir, accountant; Margaret Teresa Darragh, secretary; and Emily Oldroyd, stenographer; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Thetford Mines, Que.
Objects of the Company.—*Vide* p. 1309, *Canada Gazette*, 1918-19.

"CANADIAN-JOHNS-MANVILLE COMPANY, LIMITED."

Incorporated, September 23, 1918. - - - - Amount of capital stock, $2,500,000. Number of shares, 25,000.—Amount of each share, $100.

Corporate Members.—Gordon Walters MacDougall, and Lawrence Macfarlane, both of His Majesty's Counsel learned-in-the-law; Linton Hossie Ballantyne and William Bridges Scott, advocates; and James Creary Cartwright, accountant; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1305, *Canada Gazette*, 1918-19.

"THE MARVEL DRUG COMPANY, LIMITED."

Incorporated, September, 23, 1918. - - - - - Amount of capital stock, $20,000. Number of shares, 400.—Amount of each share, $50.

Corporate Members.—William Cooper, druggist; William Alexander Dietrich and Hiram Douglas Hall, managers; James Edgworth, esquire; and William Huntley Kirkpatrick, barrister; all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 1203, *Canada Gazette*, 1918-19.

"THE CANADIAN LADY DRESS COMPANY, LIMITED."

Incorporated, September 23, 1918. - - - - - Amount of capital stock, $40,000. Number of shares, 400.—Amount of each share, $100.

Corporate Members.—Andrew William Feick, manufacturer; Clayton Walter Feick, and Edward Winkler Voelker, accountants; Henry Oliver Feick, salesman; and Albert Winkler Voelker, insurance clerk; all of Kitchener, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Kitchener, Ont.
Objects of the Company.—*Vide* p. 1209, *Canada Gazette*, 1918-19.

"THE GISCO, LIMITED."

Incorporated September 24, 1918. - - - - - - Amount of capital stock, $90,000. Number of shares, 900.—Amount of each share, $100.

Corporate Members.—Joseph Michel Arthur Valois, physician; Paul Chouinard, druggist; Joseph Wilfrid Pilon, advocate; Alexandre Viger, commercial traveller, and Albert Guyot, accountant, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1382, *Canada Gazette*, 1918-19.

"THOMAS ORGAN AND PIANO COMPANY, LIMITED."

Incorporated September 24, 1918. - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—James Dunlop, manufacturer; John Graham Dunlop, superintendent; William McIlwraithe Dunlop, traveller; Harry Sykes, book-keeper, and Stevenson Dunlop, gentleman, all of Woodstock, Ont.
First or Provisional Directors.—James Dunlop, John Graham Dunlop, William McIlwraithe Dunlop and Harry Sykes.
Chief place of Business.—Woodstock, Ont.
Objects of the Company.—*Vide* p. 1308, *Canada Gazette,* 1918-19.

"QUEEN MARY'S NEEDLEWORK GUILD."

(Association.)

Incorporated September 24, 1918. - - - - - - - - - - Without share capital.

Corporate Members.—Mary Ethel Angus, Elizabeth Drummond, Laura Turnbull, Sarah Jackson Oppe, married women; the Honourable Marguerite Shaughnessy and Elizabeth Scott, spinsters, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1302, *Canada Gazette,* 1918-19.

"SCHEUER & COMPANY OF CANADA, LIMITED."

(As a private company.)

Incorporated September 25, 1918. - - - - - - Amount of capital stock, $10,000. Number of shares, 100.—Amount of each share, $100.

Corporate Members.—Waldo Whittier Skinner, King's Counsel; George Gordon Hyde and John Gerard Ahern, advocates; Ronald Cameron Grant, accountant, and William McElligott, secretary, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1304, *Canada Gazette,* 1918-19.

"AKED & COMPANY, LIMITED."

(As a private company.)

Incorporated September 25, 1918. - - - - - Amount of capital stock, $400,000. Number of shares, 4,000—Amount of each share, $100.

Corporate Members.—Richard Halliburton Greer, and George Reginald Forneret, solicitors; Stanley O'Shea, and Edith Lackie, law clerks; and Theresa Burns, book-keeper; all of Toronto, Ont.
First or Provisional Directors.—Richard Halliburton Greer, George Reginald Forneret, and Stanley O'Shea.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 1301, *Canada Gazette,* 1918-19.

"AIRCRAFT TRANSPORT AND TRAVEL OF CANADA, LIMITED."

(As a private company.)

Incorporated September 26, 1918. - - - - - - Amount of capital stock, $262,500.

2,500 preference shares of the par value of $100 each, 2,500 common shares without nominal or par value.

Corporate Members.—Robert Clark McMichael, King's Counsel; Daniel Percy Gillmor, and Gerald Augustine Coughlin, advocates; Francis George Bush, book-keeper; George Robert Drennan, stenographer; and Herbert William Jackson, and Michael Joseph O'Brien, clerks; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1298, *Canada Gazette*, 1918-19.

"AIRCRAFT MANUFACTURING COMPANY OF CANADA, LIMITED."

(As a private company.)

Incorporated September 26, 1918. - - - - - - Amount of capital stock, $525,000, 5,000 preference shares of the par value of $100 each, 5,000 common shares without nominal or par value.

Corporate Members.—Robert Clark McMichael, King's Counsel, Daniel Percy Gillmor, and Gerald Augustine Coughlin, advocates; Francis George Bush, book-keeper; George Robert Drennan, stenographer; and Herbert William Jackson, and Michael Joseph O'Brien, clerks; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business,—Montreal, Que.

Objects of the Company—*Vide* p. 1303, *Canada Gazette,* 1918-19.

"GUARANTEE LIQUID MEASURE COMPANY OF CANADA, LIMITED."

Incorporated September 26, 1918. - - - - - - Amount of capital stock, $50,000. Number of shares, 500—Amount of each share, $100.

Corporate Members.—Arthur Vernon Philips, Lloyd Harold Philips, and William Richardson Philips, manufacturers; David Shannon Bowlby, barrister-at-law; and Mary Louise Baetz, stenographer; all of Kitchener, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Kitchener, Ont.

Objects of the Company.—*Vide* p. 1298, *Canada Gazette,* 1918-19.

"MERKLEYS', LIMITED."

Incorporated September 26, 1918. - - - - - - Amount of capital stock, $150,000. Number of shares, 1,500—Amount of each share, $100.

Corporate Members.—Ainslie Wilson Greene, and Alan Christy Fleming, solicitors; William Smellie Mackenzie, accountant; Bertha Anna Cowan, book-keeper; and Hendry Ettie Fuller, stenographer; all of Ottawa, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Ottawa, Ont.

Objects of the Company.—*Vide* p. 1300, *Canada Gazette,* 1918-19.

"THE ARCWELL CORPORATION OF CANADA, LIMITED."

Incorporated September 27, 1918. - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Arthur Lorne Reid, barrister-at-law; William Walter Perry, secretary; Charles Herbert Croft Leggott, Nellie MacDonald and Edna Fitzsimons, accountants; all of Toronto, Ont.

First or Provisional Directors.—Arthur Lorne Reid, William Walter Perry and Charles Herbert Croft Leggott.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1381, *Canada Gazette*, 1918-19.

"CANADIAN JEWISH COMMITTEE, INCORPORATED."

(Association.)

Incorporated September 27, 1918. - - - - - - Without share capital.

Corporate Members.—Lyon Cohen, merchant; Herman Abramovitz, Rabbi; Isaac Friedman, Moses Vineberg, and David Solomon Friedman, retired merchants; Henry Weinfield and Marcus Meyer Sperber, advocates; all of Montreal, Que.

First or Provisional Directors.—Lyon Cohen, Isaac Friedman, and Marcus Meyer Sperber.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1308, *Canada Gazette*, 1918-19.

"RELIANCE KNITTING COMPANY, LIMITED."

Incorporated September 28, 1918. - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Frank Russell Sweeney, manufacturer; Joseph Edward Mortimer, general manager; Ferguson James Dunbar, solicitor, and Florence Strong and Ella Laurena Black, stenographers, all of Toronto, Ont.

First or Provisional Directors.—Ferguson James Dunbar, Florence Strong, and Ella Laurena Black.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1306, *Canada Gazette*, 1918-19.

"DOMINION ADVERTISERS, LIMITED."

Incorporated September 30, 1918. - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Ross Oliver Stevenson, advertiser; George Robert Leslie Hoad, Percy Roycroft, and Richard Balmer Proctor, accountants, and Arthur Snell King, manufacturers' agent, all of Montreal, Que.

First or Provisional Directors.—Ross Oliver Stevenson, George Robert Leslie Hoad, and Percy Roycroft.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1307, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"ELECTRIC IRON, LIMITED."

Incorporated September 30, 1918. - - - - - - - Amount of capital stock, $45,000. Number of shares, 450.—Amount of each share, $100.

Corporate Members.—James Brockett Tudhope, and William Hugh Tudhope, manufacturers; Melville Brockett Tudhope, barrister; Mona Reardon, stenographer, and Robert Lakewood Whitman, bank manager, all of Orilla, Ont.

First or Provisional Directors.—James Brockett Tudhope, William Hugh Tudhope and Melville Brockett Tudhope.

Chief place of Business.—Orilla, Ont.

Objects of the Company.—*Vide* p. 1309, *Canada Gazette*, 1918-19.

"THE CANADIAN CONVALESCENT HOSPITAL, CLARENCE HOUSE, ROEHAMPTON.

(Association.)

Incorporated September 30, 1918. - - - - - - - - - Without share capital.

Corporate Members.—Winifrid Miriam Lewis, Anna Hilda Pinhey, and Mary Alberta Blackburn, spinsters; Charles Herbert Pinhey, civil engineer; Andrew Walker Fleck, gentleman, and William Boyne Harshaw, bank manager, all of Ottawa, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Ottawa, Ont.

Objects of the Company.—*Vide* p. 1308, *Canada Gazette*, 1918-19.

"KEROSENE EQUIPMENT COMPANY, LIMITED."

Incorporated October 1, 1918. - - - - - - - - Amount of capital stock, $49,000. Number of shares, 490.—Amount of each share, $100.

Corporate Members.—Adélard Lapierre, and Osias Théoret, merchants; Joseph Emile Robichaud, agent; Camille Robichaud, bank clerk; and Gabriel Albert Terrault, notary, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1427, *Canada Gazette*, 1918-19.

"COLUMBIA SECURITIES, LIMITED."

(As a Private Company.)

Incorporated October 3, 1918. - - - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—Francois Philippe Brais, advocate; Clara Thomas, Laura May Smith, and Ella Jackson, stenographers; and Lily Copping, clerk, all of Montreal, Que.

First or Provisional Directors.—Francois Philippe Brais, Clara Thomas and Laura May Smith.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1387, *Canada Gazette*, 1918-19.

"NEW BRUNSWICK SULPHATE FIBRE COMPANY, LIMITED."

(Re-incorporation.)

Incorporated, October 3, 1918. - - - Amount of capital stock, $600,000. Number of shares, 6,000.—Amount of each share, $100.

Corporate Members.—Charles Howard Smith, manufacturer; William Doig Robb, railway executive; Harold Crabtree, secretary; William D'Oyley Hutchins, manufacturer's agent; and John Joseph Meagher, King's Council; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1387, *Canada Gazette*, 1918-19.

"THE UNITED GREEK BAKERY COMPANY, LIMITED."

Incorporated, October 3, 1918. - - - Amount of capital stock, $49,000. Number of shares, 490.—Amount of each share, $100.

Corporate Members.—Christophoris Drakulos and Zacharios Kipuros, bakers; Emile Marcotte, advocate; Cecile Gervais, stenographer; and Liguori Hebert, student, all of Montreal, Que.
First or Provisional Directors.—Christophoris Drakulos, Zacharios Kipuros and Emile Marcotte.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1383, *Canada Gazette*, 1918-19.

"UNITED PRESERVERS SUGAR CO., LIMITED."

Incorporated, October 3, 1918. - - - Amount of capital stock, $1,000,000.

4,000 shares of preferred stock at par value of $100, each 6,000 shares of common stock at each value of $100 each.

Corporate Members.—Andrew Wentworth Hunter, John Clark Thomson, and Charles Henry Kemp, solicitors; Edward Boyle Dowdall, and James Joseph Frawley, students-at-law, all of Toronto, Ont.
First or Provisional Directors.—John Clark Thomson, Charles Henry Kemp and Edward Boyle Dowdall.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 1384, *Canada Gazette*, 1918-19.

"THE RED MAGEN DAVID SOCIETY OF WESTERN CANADA."

(Association.)

Incorporated, October 3, 1918. - - - - - - Without share capital.

Corporate Members.—Mary Stockhammer, Rebecca Leveten, Luba Spivak, Jessie Gumm, Hannah Bregman, Lena Wasel and Clara Kershner, married women, Lena Calof, book-keeper, Passie Chertkow, widow, Simon Stockhammer, broker, and Samuel Ginsburg, retail merchant, all of Winnipeg, Man.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Winnipeg, Man.
Objects of the Company.—*Vide* p. 1385, *Canada Gazette*, 1918-19.

"G. & J. ESPLIN, LIMITED."

Incorporated, October 5, 1918. - - - - - - Amount of capital stock, $400,000. Number of shares, 4,000.—Amount of each share, $100.

Corporate Members.—Eratus Edwin Howard, King's Counsel; Harold Ernest Andrews Rose, advocate; Oswald Fletcher Edwards, clerk; and Henry Charles McNeil, accountant; all of Montreal, Que.; and Jacob De Witt, of Outremont, Que, advocate.

First or Provisional Directors.—Eratus Edwin Howard, Harold Ernest Andrews Rose and Jacob De Witt.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1390, *Canada Gazette,* 1918-19.

"CANADIAN INDUSTRIAL ALCOHOL COMPANY, LIMITED."

Incorporated October 5, 1918. - - - - - - Amount of capital stock, $5,000,000 Number of shares, 50,000.—Amount of each share, $100.

Corporate Members.—Arthur Ramsey Holden, King's Counsel; August Mathieu, student-at-law; Herbert William Shearer, manager; Alfred Boreham Wright, and Arthur Charters, clerks; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1386, ,*Canada Gazette,* 1918-19.

"THE MERCHANTS BUTTON COMPANY, LIMITED."

Incorporated October 5, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Richard Roschman, and Rudolf Roschman, manufacturers; Carl Richard Roschman, superintendent; Eugene Louis Roschman, accountant; and Nancy Roschman, and Mary Roscham, married women; all of Kitchener, Ont.

First or Provisional Directors.—Richard Roschman, Rudolf Roschman, Carl Richard Roschman and Eugene Louis Roschman.

Chief place of Business.—Waterloo, Ont.

Objects of the Company.—*Vide* p. 1387, *Canada Gazette,* 1918-19.

"RICHARD ROSCHMAN AND BROTHER, LIMITED."

Incorporated October 5, 1918. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Richard Roschman and Rudolf Roschman, manufacturere; Carl Richard Roschman, superintendent; Eugene Louis Roschman, accountant; Nancy Roschman, and Mary Roschman, married women; all of Kitchener, Ont.

First or Provisional Directors.—Richard Roschman, Rudolf Roschman, Carl Richard Roschman and Eugene Louis Roschman.

Chief place of Business.—Waterloo, Ont.

Objects of the Company.—*Vide* p. 1389, *Canada Gazette,* 1918-19.

"WOODSTOCK WORSTED SPINNING COMPANY, LIMITED."

(As a private company.)

Incorporated October 7, 1918. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Edwin Holden and Charles Edwin Dunmoyer, manufacturers; Robert Notman Ball, barrister-at-law; Robert Abbott, shipper, and Marjorie Pateman, stenographer, all of Woodstock, Ont.

First or Provisional Directors.—Edwin Holden, Charles Edwin Dunmoyer and Robert Abbott.

Chief place of Business.—Woodstock, Ont.

Objects of the Company.—*Vide* p. 1386, *Canada Gazette*, 1918-19.

"CANADIAN PLANT EQUIPMENT COMPANY, LIMITED."

(As a private company.)

Incorporated October 8, 1918. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Waldo Whittier Skinner, King's Counsel; George Gordon Hyde and John Gerard Ahern, advocates; Ronald Cameron Grant, accountant, and William McElligott, secretary, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1463, *Canada Gazette*, 1918-19.

"THE Q. & C. COMPANY OF CANADA, LIMITED."

(As a private company.)

Incorporated October 8, 1918. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John Inkerman MacCraken and Alan Christy Fleming, barristers; William Smellie Mackenzie, accountant; Bertha Anna Cowan, bookkeeper, and Kathleen Boucher, stenographer, all of Ottawa, Ont.

First or Provisional Directors.—John Inkerman MacCraken, Alan Christy Fleming and William Smellie Mackenzie.

Chief place of Business.—Ottawa, Ont.

Objects of the Company.—*Vide* p. 1389, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued October 9, 1918, to

"SEWARDS, LIMITED."

Increasing the capital stock of the said company from the sum of $30,000 to the sum of $100,000, being an addition of 700 shares of $100 each to the present capital stock.

Vide p. 1467, *Canada Gazette*, 1918-19.

"THE GREAT WAR VETERANS' ASSOCIATION OF CANADA."

(Association.)

Incorporated October 9, 1918. - - - - - - - - - - - - - Without share capital.

Corporate Members.—Willard Parker Purney, of Halifax, N.S., barrister-at-law; William Hendrie, of Hamilton, Ont., contractor; Richard Douglas Ponton, of Belleville, Ont., barrister-at-law; Holly Hudi Patchell, of St. John, N.B., salesman, and Alexander MacKenzie Forbes, of Montreal, Que., surgeon.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Ottawa, Ont.

Objects of the Company.—*Vide* p. 1466, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued October 9, 1918, to

"MONTREAL MARINE INSURANCE AGENCY, LIMITED."

Changing the corporate name of the said company to that of

"O'KEEFE & LYNCH OF CANADA, LIMITED."

Vide p. 1467, *Canada Gazette*, 1918-19.

"SMITH & WALSH, LIMITED."

(As a private company.)

Incorporated, October 10, 1918. - - - - - - - - Amount of capital stock, $40,000. Number of shares, 400.—Amount of each share, $100.

Corporate Members.—James Edward Walsh, manager; James Peter Walsh, insurance broker; Stuart Benjamin Brown, clerk; Frances Dorothy Walsh and Edna Reine Woodcock, stenographers, all of Toronto, Ont.

First or Provisional Directors.—James Edward Walsh, James Peter Walsh and Stuart Benjamin Brown.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1463, *Canada Gazette*, 1918-19.

"S. S. STAFFORD, LIMITED."

(As a private company.)

Incorporated, October 12, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500, without nominal or par value.

Corporate Members.—William Spencer Stafford and Robert Bachia, manufacturers, Leonore Schroeder Stafford, widow, all of New York, N.Y., U.S.A.; Frederick Thomas Butler, manufacturer, and Franklin Wellington Wagenast, barrister, of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1466, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued October 12, 1918, to

"CANADIAN NORTHERN REALTIES, LIMITED."

Extending the powers of the said company.

Vide p. 1529, *Canada Gazette*, 1918-19.

"THE P.Q. TOWING COMPANY, LIMITED."

Incorporated, October 12, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—George Cranch Scott, of Boston, Mass., U.S.A., manager; Charles Jackson Paine, of Weston, Mass., U.S.A., treasurer; and Felix Rackemann, of Milton, Mass., U.S.A., lawyer; Philip Rodney Hussey, of Dalhousie, N.B., manager of operations; and Frank Joseph Allard, of Carleton, Que., steamboat engineer.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Dalhousie, N.B.

Objects of the Company.—*Vide* p. 1528, *Canada Gazette*, 1918-19.

"BRITISH AMERICAN STEAMSHIP COMPANY, LIMITED."

Incorporated, October 15, 1918. - - - - - - Amount of capital stock, $3,000,000. Number of shares, 30,000.—Amount of each share, $100.

Corporate Members.—Alexander Fasken, George Herbert Sedgewick, Robert Spelman Robertson, John Wellington Pickup, James Aitchison, and Norman Stuart Caudwell, barristers-at-law, and Duncan Angus McCrimmon, accountant, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1465, *Canada Gazette,* 1918-19.

"CONSOLIDATED MACHINE AND TOOL COMPANY, LIMITED."

Incorporated October 15, 1918. - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Willoughby Staples Brewster and George Davey Heyd, barristers-at-law; Belle Roberts Brewster, married woman; Margaret Joanna Morrison, and Edith Nellie Townsend, stenographers; all of Brantford, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Brantford, Ont.

Objects of the Company.—*Vide* p .1528, *Canada Gazette,* 1918-19.

"MABEE CONDENSED MILK CO., LIMITED."

Incorporated October 15, 1918. - - - - - - Amount of capital stock, $1,500,000. 10,000 shares of preference stock and 5,000 shares of common stock at the par value of $100, each.

Corporate Members.—Andrew Wentworth Hunter, John Clark Thomson, and Charles Henry Kemp, solicitors; Edward Boyle Dowdall, student-at-law; and George Roy Sproat, accountant; all of Toronto, Ont.

First or Provisional Directors.—John Clark Thomson, Charles Henry Kemp and Edward Boyle Dowdall.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1527, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued October 16, 1918, to

"DOMINION CHAIN COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $500,000 to the sum of $1,000,000 being an addition of 5,000 shares of $100 each to the present capital stock.

Vide p. 1530, *Canada Gazette,* 1918-19.

"PETRIE MANUFACTURING COMPANY, LIMITED."

Incorporated October 16, 1918. - - - - - - Amount of capital stock, $2,000,000. Number of shares, 20,000.—Amount of each share, $100.

Corporate Members.—Alexander Bain Petrie, senior, manufacturer; and Sarah Lavantia Petrie, married woman; both of Guelph, Ont.; George Robert Petrie, Alexander Bain Petrie, junior, and Harold James Petrie, manufacturers; and Lavantia Christina Christie, married woman, all of Hamilton, Ont.; and Thomas Stewart Petrie, of Winnipeg, Man., manufacturer.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 1526, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued October 16, 1918, to

"CIRCLE BAR KNITTING COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $50,000 to the sum of $150,000, being an addition of 1,000 shares of $100 each to the present capital stock.

Vide p. 1529, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued October 17, 1918, to

"NATIONAL AND FOREIGN CORPORATION, LIMITED."

Increasing the capital stock of the said company from the sum of $50,000 to the sum of $1,000,000, being an addition of 9,500 shares of $100 each, to the present capital stock, and declaring the said company a private company.

Vide p. 1530, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued October 18, 1918, to

"C. H. ROOKE, LIMITED."

Changing the corporate name of the said company to that of

"ELECTRICAL SYSTEMS, LIMITED."

Vide p. 1572, *Canada Gazette*, 1918-19.

"THE PULP AND PAPER MILLS SUPPLY COMPANY, LIMITED."

(As a private company.)

Incorporated October 21, 1918. - - - - - - - Amount of capital stock, $150,000. Number of shares, 1,500—Amount of each share, $100.

Corporate Members.—Thomas James Coulter, William Stanley Jones, and Lillie Vilura Murphy, accountants; Percival William Peacock, secretary-treasurer; and Reginald Hurst Dare, insurance adjuster; all of Montreal, Que.

First or Provisional Directors.—Thomas James Coulter, William Stanley Jones and Percival William Peacock.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1571, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued October 21, 1918, to

"THE BEAVER COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $2,000,000 to the sum of $5,000,000, being an addition of 30,000 shares of $100 each to the present capital stock.

Vide p. 1631, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued October 21, 1918, to

"HALIFAX SHIPYARDS, LIMITED."

Increasing the capital stock of the said company from the sum of $6,000,000 to the sum of $10,000,000 being an addition of 40,000 shares of $100 each to the present capital stock.

Vide p. 1572, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued October 21, 1918, to

"DILLON CRUCIBLE ALLOYS, LIMITED."

Increasing the capital stock of the said company from the sum of $100,000 to the sum of $525,000 being an addition of 4,000 shares of $100 and 3,000 shares of $5 each to the present capital stock.

Vide p. 1572, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued October 22, 1918, to

"CUSHMAN MOTOR WORKS OF CANADA, LIMITED."

Increasing the capital stock of the said company from the sum of $100,000 to the sum of $500,000 being an addition of 4,000 shares of $100 each to the present capital stock.

Vide p. 1572, *Canada Gazette*, 1918-19.

"U. S. AND CANADA TRANSPORT AND TRADING COMPANY, LIMITED."

(As a private company.)

Incorporated October 23, 1918. - - - - - - Amount of capital stock, $2,500,000. Number of shares, 25,000.—Amount of each share, $100.

Corporate Members.—Joseph Max Bullen and Norman Stuart Robertson, barristers-at-law; Wendell Osborne, student-at-law; Agnes Porter Traill, accountant, and Lena Duff, stenographer, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 1568, *Canada Gazette*, 1918-19.

"FRASER, BRACE SHIPYARDS, LIMITED."

(As a private company.)

Incorporated October 24, 1918. - - - - - - Amount of capital stock, $750,000. Number of shares, 7,500.—Amount of each share, $100.

Corporate Members.—Darley Burley-Smith, clerk; Frank Mansfield Jordan, and Charles George Macartney, accountants; Patrick William Rafferty, purchasing agent, and Felix Winfield Hackett, advocate, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1570, *Canada Gazette*, 1918-19.

"LA COMPAGNIE DE CHAUSSURES LASALLE, LIMITEE."

Incorporated October 24, 1918. - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.— Romulus Robitaille, bailiff; Joseph Alphonse Henri Dequoy, notary public; Fortunat Dequoy, student; Yvonne Potvin, stenographer, and Clément Robitaille, advocate, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1570, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"CANADIAN SERBIAN RELIEF COMMITTEE."

(Association.)

Incorporated October 24, 1918. - - - - - - - - - - - Without share capital.

Corporate Members.—William Alexander Langton, architect; Constance Eaton Hamilton, married woman; James Leith Ross, barrister; Naomi Boulton, stenographer, and Alexander Mainwaring Morris Kirkpatrick, insurance agent, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1569, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued October 28, 1918, to

"BEAVER BOARD TIMBER COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $50,000 to the sum of $1,000,000 being an addition of 9,500 shares of $100 each to the present capital stock.

Vide p. 1631, *Canada Gazette,* 1918-19.

"PEMBERTON SMITH & COMPANY, LIMITED."

Incorporated October 28, 1918. - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—Gerald Augustine Coughlin, advocate; Francis George Bush, book-keeper; George Robert Drennan, stenographer; Herbert William Jackson, and Michael Joseph O'Brien, clerks, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1760, *Canada Gazette,* 1918-19.

"THE BELLEVILLE RUBBER COMPANY, LIMITED."

Incorporated October 28, 1918. - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Wilson Saunders Morden, manager; Ernest William McNeill, secretary; Carroll Dana Dyke, real estate broker; Willa Evelyn Eckardt, clerk, and Stella Hester Young, accountant, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Belleville, Ont.

Objects of the Company.—*Vide* p. 1628, *Canada Gazette,* 1918-19.

"GIDEON MILLER COMPANY, LIMITED."

Incorporated, October 29, 1918. - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—James Edward Day and John Michael Ferguson, barristers-at-law; Gladys Louise Lee and Eileen Jamison, stenographers, and Ella Edith Purvis, book-keeper, all of Toronto, Ont.

First or Provisional Directors.—James Edward Day, Gladys Louise Lee and Ella Edith Purvis.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1630, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued October 30, 1918, to

"ROGERS LUMBER YARDS, LIMITED."

Extending the powers of the said Company.
Vide p. 1631, *Canada Gazette*, 1918-19.

"RU-BER-OID FELT MFG. CO., LIMITED."

Incorporated November 2, 1918. - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Abraham Saul Cohen, accountant, Jean Baptiste Beaupré, bailiff, Ernest Walter Bush, official stenographer, and Florence Varney, and Lillian Freedman, stenographers, all of Montreal, Que.
First or Provisional Directors.—Abraham Saul Cohen, Jean Baptiste Beaupré and Ernest Walter Bush.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1629, *Canada Gazette*, 1918-19.

"McKENZIE MACHINERY COMPANY, LIMITED."

Incorporated November 5, 1918. - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Daniel McKenzie, manufacturer, Isebella McKenzie, married woman, both of Guelph, Ont.; Jean Charlesworth and Florence Gertrude Biscoe, accountants, and Verna Charlesworth, stenographer, of Brantford, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Preston, Ont.
Objects of the Company.—*Vide* p. 1760, *Canada Gazette*, 1918-19.

"FLAX SPINNERS, LIMITED."

Incorporated November 7, 1918. - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—David Melville Sanson, manufacturer, James Walter Lyon, gentleman, George Byron Ryan, merchant, and William Berry, Superintendent, all of Guelph, Ont.; John Bowerman Ferguson, banker, George Dinsbaugh Perry, manager, George Harold Muntz, insurance broker, F. Barry Hayes, manufacturer, all four of Toronto, Ont., and George H. Townsend, of Dundas, Ont., gentleman.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Guelph, Ont.
Objects of the Company.—*Vide* p. 1758, *Canada Gazette*, 1918-19.

(Re-incorporation.)

"LEASIDE MUNITIONS COMPANY, LIMITED."

Incorporated November 7, 1918. - - - - - Amount of capital stock, $10,000,000. Number of shares, 100,000.—Amount of each share, $100.

Corporate Members.—Emil Andrew Wallberg, civil engineer, Frederick John Bell, electrical engineer, both of Toronto, Ont.; Herbert Henry Horsfall, mechanical engineer, Judson Reeves Nichols, civil engineer; and Harry John Boggis, secretary-treasurer, of Leaside, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Leaside, Ont.
Objects of the Company.—*Vide* p. 1755, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued November 7, 1918, to

"VAN DER LINDE RUBBER COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $350,000 to the sum of $600,000 being an addition of 2,500 shares of $100 each to the present capital stock.

Vide p. 1764, *Canada Gazette*, 1918-19.

"THE MASSEY FOUNDATION."

(Association.)

Incorporated November 7, 1918. - - - - - - - - - - Without share capital

Corporate Members.—Chester Daniel Massey, and Thomas Findley, manufacturers, Charles Vincent Massey, university lecturer; Raymond Hart Massey, army officer; and William Lawson Grant, head-master; all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1818, *Canada Gazette*, 1918-19.

"GENERAL MOTORS OF CANADA, LIMITED."

(As a Private Company.)

Incorporated November 8, 1918. - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Alexander Leslie and John Edward Laughlin, managers, Hugh Leslie McDowell, treasurer; Bruce Harrison, book-keeper; and John Henry Coburn, barrister-at-law, all of Walkerville, Ont.

First or Provisional Directors.—Hugh Leslie McDowell, Bruce Harrison and John Henry Coburn.

Chief place of Business.—Walkerville, Ont.

Objects of the Company.—*Vide* p. 1754, *Canada Gazette*, 1918-19.

"THE BRITISH AMERICAN DYEING COMPANY, LIMITED."

Incorporated November 9, 1918. - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Joseph Armitage Ewing, advocate and King's Counsel; George Samuel McFadden, advocate; John Travers Smith, clerk; Edith Richardson and Irene Craig, stenographers, all of Montreal, Que.

First or Provisional Directors.—Joseph Armitage Ewing, George Samuel McFadden and John Travers Smith.

Chief place of Business.—Verdun, Que.

Objects of the Company.—*Vide* p. 1759, *Canada Gazette*, 1918-19.

"NORTH AMERICAN REINDEER COMPANY, LIMITED."

Incorporated November 9, 1918. - - - - - - Amount of capital stock, $100,000. Number of shares, 10,000.—Amount of each share, $10.

Corporate Members.—Nicholas Henry Kern, physician; George Benedict Seiter, electrical engineer; and Richard Henry Jones, manufacturer, of Chicago, Ill., U.S.A.; Frederick Swan Lawrence, of South Bend, Ind., U.S.A., manager; Harry Bragg, of Montreal, Que., journalist.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2114, *Canada Gazette*, 1918-19.

"P. W. ARGUE, LIMITED."

(As a private company.)

Incorporated November 9, 1918. - - - - - - Amount of capital stock, $75,000. Number of shares, 750.—Amount of each share, $100.

Corporate Members.—John Fenton Argue, physician; William Frederick Argue, student; Andrew Haydon, barrister-at-law; Lyla Brennan and Belle Fraser, stenographers, all of Ottawa, Ont.
First or Provisional Directors.—John Fenton Argue, William Frederick Argue and Andrew Haydon.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 1757, *Canada Gazette*, 1918-19.

"H. FORTIER & SONS, LIMITED."

Incorporated November 12, 1918 - - - - - - Amount of capital stock, $40,000. Number of shares, 400.—Amount of each share, $100.

Corporate Members.—Louis Athanase David and Louis Philippe Crepeau, both of His Majesty's Counsel learned-in-the-law; Segfried Hinson Read Bush and Benjamin Robinson, advocates, and George Whittaker, accountant, all of Montreal, Que.
First or Provisional Directors.—Louis Athanase David, Louis Philippe Crepeau and Segfried Hinson Read Bush.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1762, *Canada Gazette*, 1918-19.

"THE McCLEAN MACHINE AND TOOL COMPANY, LIMITED."

Incorporated November 13, 1918. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—George Harold Gilday, barrister-at-law; Robert Lord Webster, law student; Loretta Flynn, book-keeper; and Margaret Isabella Wood and Eileen Caulfield, stenographers, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Niagara Falls, Ont.
Objects of the Company.—*Vide* p. 1763, *Canada Gazette*, 1918-19.

"LAMSON & HUBBARD CANADIAN COMPANY, LIMITED."

Incorporated November 13, 1918. - - - - - Amount of capital stock, $325,000.

3,000 preference shares of $100 each and 5,000 shares without nominal or par value.

Corporate Members,—Arthur Lorne Reid, solicitor; William Walter Perry, secretary; Archibald MacLean Borthwick, Charles Herbert Croft Leggott, and Edna Fitzsimons, accountants; all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 1819, *Canada Gazette*, 1918-19,

SESSIONAL PAPER No. 29

"CANADA TACK AND NAIL CO., LIMITED."

(As a private company.)

Incorporated November 13, 1918. - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.— Amount of each share, $100.

Corporate Members.—John Roy Marshall and Arthur Burgess Turner, barristers-at-law; George Alexander Young, solicitor's clerk; and Amy Helena Johnson and Isabell Glen, stenographers; all of Hamilton, Ont.

First or Provisional Directors.—John Roy Marshall, Arthur Burgess Turner and George Alexander Young.

Chief place of Business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 1824, *Canada Gazette*, 1918-19.

"A. ST. DENIS, LIMITED."

Incorporated November 15, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 50,000.—Amount of each share, $1.

Corporate Members.—Arthur St. Denis, agent; Joseph Narcisse St. Denis, traveller; John Hillman, and Henri Hillman, clerks; Donat Léo Régimbal, bookkeeper; all of Sudbury, Ont.

First or Provisional Directors.—Arthur St. Denis, Joseph Narcisse St. Denis and Donat Léo Régimbal.

Chief place of Business.—Sudbury, Ont.

Objects of the Company.—*Vide* p. 1763, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued November 18, 1918, to

"CANADA COLD STORAGE COMPANY, LIMITED."

Extending the powers of the said company.

Vide p. 1818, *Canada Gazette*, 1918-19.

"NATIONAL PUBLICITY, LIMITED."

Incorporated November 18, 1918. - - - - - - - Amount of capital stock, $49,000. Number of shares, 490.—Amount of each share, $100.

Corporate Members.—Gerald Augustine Coughlin, advocate; Francis George Bush, book-keeper; George Robert Drennan, stenographer, and Michael Joseph O'Brien and Herbert William Jackson, clerks, all of the city of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1819, *Canada Gazette* 1918-19.

"MACLEAY COAL AND COKE COMPANY, LIMITED."

Incorporated November 18, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John Edward Moriarty, of Westmount, Que., manager; Albert James Cameron and John Travers Smith, clerks; Joseph Armitage Ewing, King's counsel, and George Samuel McFadden, advocate, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1761, *Canada Gazette*, 1918-19.

"TWIN CITY COAL MINES, LIMITED."

Incorporated November 18, 1918. - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Robert Lewis McIntyre and Joseph Henry McGregor, manufacturers; Gordon Alfred Hicks, clerk; William Robert Smyth, solicitor, and Kenneth Sidney Murton, student-at-law, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 1761, *Canada Gazette*, 1918-19.

"INTERNATIONAL GLYCERONE COMPANY, LIMITED."

(As a private company.)

Incorporated November 18, 1918. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Gerald Augustine Coughlin, advocate; Francis George Bush, book-keeper; George Robert Drennan, stenographer; Herbert William Jackson, and Michael Joseph O'Brien, clerks, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1827, *Canada Gazette*, 1918-19.

"GULF OF ST. LAWRENCE SHIPPING & TRADING COMPANY, LIMITED."

(As a private company.)

Incorporated November 18, 1918. - - - - - - Amount of capital stock, $3,000,000. Number of shares, 30,000.—Amount of each share, $100.

Corporate Members.—William Kenneth McKeown, King's counsel; Lorne Clayton Herdman, stock broker; George Edward Chart, accountant; Berthe Charlebois and Mary Blanche McKeown, stenographers, all of Montreal, Que.
First or Provisional Directors.—William Kenneth McKeown, Lorne Clayton Herdman and Berthe Charlebois.
Chief place of Business.—Quebec, Que.
Objects of the Company.—*Vide* p. 1821, *Canada Gazette*, 1918-19.

"THE CHRISTIAN WORKERS CHURCH OF CANADA."

(Association.)

Incorporated November 19, 1918 - - - - - - - - - - Without share capital.

Corporate Members.—Peter Willey Philpott, minister of the gospel; Frederick William Haynes, shipper; James Colin Pinch, inspector; Albert Alfred Brown, gentleman; and Abraham Norman, produce merchant; all of Hamilton, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Hamilton, Ont.
Objects of the Company.—*Vide* p. 1834, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"VALCARTIER LUMBER AND PULP COMPANY, LIMITED."

Incorporated November 19, 1918. - - - - - - - Amount of capital stock, $150,000. Number of shares, 1,500.—Amount of each share, $100.

Corporate Members.—Arthur Warsopp Cooper, of Beaupré, Que., manager; Charles Edmond Taschereau and Joseph Philéas Cantin, notaries public; Joseph André Dolbec, accountant; and Elzire Rochette, stenographer; all four of Quebec, Que.

First or Provisional Directors.—Arthur Warsopp Cooper, Charles Edward Taschereau and Joseph Philéas Cantin.

Chief place of Business.—Quebec, Que.

Objects of the Company.—*Vide* p. 1826, *Canada Gazette*, 1918-19.

"CANADIAN INTERNATIONAL CORPORATION, LIMITED."

Incorporated November 19, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John Wilson Cook, King's Counsel, Maurice Goudrault, advocate; and Emily Oldroyd, stenographer, of Montreal, Que, Thomas Barnard Gould, of Lachine, Que., accountant; and Alexander Huntly Duff, of Westmount, Que., King's Counsel.

First or Provisional Directors.—John Wilson Cook, Maurice Goudrault and Emily Oldroyd.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1828, *Canada Gazette*, 1918-19.

"NATIONAL OIL BURNER & HEATING COMPANY, LIMITED."

Incorporated November 19, 1918. - - - - - - Amount of capital stock, $300,000. Number of shares, 30,000.—Amount of each share, $10.

Corporate Members.—Thomas Hubert Wilson, and Jacob William Broudy, barristers-at-law; William Ralph Bird, broker; John Richards, builder; and George Robert Dane, agent, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1832, *Canada Gazette*, 1918-19.

"UNITED OILS, LIMITED."

Incorporated November 20, 1918. - - - - - - - Amount of capital stock, $350,000 Number of shares, 350,000.—Amount of each share, $1.

Corporate Members.—Austin de Bernus Winter, Percy Alexander Carson, Roy Manning Edmanson and William Gordon Egbert, barristers-at-law, and Greta Adele Playter, student-at-law, all of Calgary, Alta.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Calgary, Alta.

Objects of the Company.—*Vide* p. 1822, *Canada Gazette*, 1918-19.

"ASBESTOS MANUFACTURING COMPANY, LIMITED."

Incorporated November 20, 1918. - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Honourable Philippe Jacques Paradis, Legislative Counsellor, Charles Edmond Taschereau and Joseph Philéas Cantin, notaries public, Ulric Bilodeau, accountant, and Elzire Rochette, stenographer, all of Quebec, Que.

First or Provisional Directors.—Honourable Philippe Jacques Paradis, Charles Edmond Taschereau and Joseph Philéas Cantin.

Chief place of Business.—Quebec, Que.

Objects of the Company.—*Vide* p. 1832, *Canada Gazette*, 1918-19.

"MURPHY VICTORY FURNACE COMPANY, LIMITED."

(As a Private Company.)

Incorporated November 20, 1918. - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Andrew Haydon, John Parsons Ebbs and Duncan Roy Kennedy, barristers-at-law, Belle Fraser and Lyla Brennan, stenographers, all of Ottawa, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 1829, *Canada Gazette*, 1918-19.

"BRITISH DOMINIONS SECURITIES CORPORATION, LIMITED."

Incorporated November 21, 1918. - - - - - - Amount of capital stock, $2,000,000. Number of shares, 20,000.—Amount of each share, $100.

Corporate Members.—Gordon Walters MacDougall, King's Counsel, John MacNaughton and William Bridges Scott, advocates, James Geary Cartwright, accountant, all of Montreal, Que., and Linton Hossie Ballantyne, advocate, of Westmount, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1827, *Canada Gazette*, 1918-19.

"CANADA CARBON AND RIBBON COMPANY, LIMITED."

(As a Private Company.)

Incorporated November 22, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Leslie Herbert Coombes, secretary, James Ross Lovatt, accountant, May Coad, Ina Maud Johnston and Helen Robina Weir, stenographers, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 1825, *Canada Gazette*, 1918-19.

"CANADA WYOMING REFINING, LIMITED."

Incorporated November 22, 1918. - - - - - - Amount of capital stock, $2,000,000. Number of shares, 20,000.—Amount of each share, $100.

Corporate Members.—William Alfred James Case, solicitor; James Broadbent Taylor and George Evans Atwood, accountants; and Cyril Middleton Smith and George Meredith Huycke, students-at-law, all of Toronto, Ont.
First or Provisional Directors.—William Alfred James Case, James Broadbent Taylor and George Evans Atwood.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 1833, *Canada Gazette*, 1918-19.

"INVICTUS SHOE, LIMITED."

Incorporated November 22, 1918. - - - - - - - Amount of capital stock, $10,000. Number of shares, 100.—Amount of each share, $100.

Corporate Members.—Louis Athanase David and Louis Philippe Crepeau, both of His Majesty's Counsel learned-in-the-law; Segfried Hinson Read Bush and Benjamin Robinson, advocates; and John Parker Callaghan, student-at-law, all of Montreal, Que.

First or Provisional Directors.—Louis Athanase David, Louis Philippe Crepeau and Segfried Hinson Read Bush.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1828, *Canada Gazette*, 1918-19.

"THE CAPITAL LITHOGRAPH COMPANY, LIMITED."

Incorporated November 22, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John More McLaren, broker; John Clark Imlay, accountant; William Murdoch McLaren, physician; Fred Marston Switzer, engraver; and Louis Joseph Kehoe, barrister, all of Ottawa, Ont.

First or Provisional Directors.—John More McLaren, John Clark Imlay and Fred Marston Switzer.

Chief place of Business.—Ottawa, Ont.

Objects of the Company.—*Vide* p. 1831, *Canada Gazette*, 1918-19.

"NATIONAL TIE AND TIMBER COMPANY, LIMITED."

Incorporated November 22, 1918. - - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—Francis Dennis Milligan and Homer Eugene Morrow, contractors; John Samuel Blair, grain merchant; Carl Henry Peterson, accountant; and Wallace Roy Dawkins, clerk, all of Winnipeg, Man.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Winnipeg, Man.

Objects of the Company.—*Vide* p. 1830, *Canada Gazette*, 1918-19.

"BRASS AND METAL PRODUCTS, LIMITED."

Incorporated November 22, 1918. - - - - - - - Amount of capital stock, $300,000.

Divided into 1,000 shares of preference stock of the par value of $100 each, and 2,000 shares of common or ordinary stock of the par value of $100 each.

Corporate Members.—John Clark Thomson and Charles Henry Kemp, solicitors; George Roy Sproat, accountant; Edward Boyle Dowdall and James Joseph Frawley, students-at-law, all of Toronto, Ont.

First or Provisional Directors.—John Clark Thomson, George Roy Sproat and Edward Boyle Dowdall.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1904, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued November 25, 1918 to

"BESSETTE & ASHBY, LIMITED."

Increasing the capital stock of the said company from the sum of $10,000 to the sum of $50,000 being an addition of 800 shares of $50 each to the present capital stock. *Vide* p. 1817, *Canada Gazette*, 1918-19.

"CANADIAN NATIONAL SAFETY LEAGUE."

(Association.)

Incorporated November 25, 1918. - - - - - - - - - - Without share capital.

Corporate Members.—Lucien Baines Howland, lumber merchant; Colin Æmilius Campbell, and Arthur Hewitt, managers; William John Lockwood McKay, barrister, and John Francis Henry Wyse, consulting engineer, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1818, *Canada Gazette*, 1918-19.

"GENEST & GENEST, LIMITEE."

Incorporated November 25, 1918. - - - - - - Amount of capital stock, $24,000. Number of shares, 240.—Amount of each share, $100.

Corporate Members.—Jean-Baptiste Rosario Genest, broker; Joseph Edgar-Michel Genest, commercial traveller; and Marie Eugénie Provost, wife separate as to marriage of the said Joseph-Edgar-Michel Genest, and duly authorized by him, all three of Montreal, Que.; Antonio-Louis Genest, broker, and Alma Leclerc, wife separate as to property by marriage contract of the said Antonio-Louis Genest, and duly authorized by him, all of Sherbrooke, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1864, *Canada Gazette*, 1918-19.

"EDGEWOOD SHIPPING COMPANY, LIMITED."

Incorporated November 26, 1918. - - - - - Amount of capital stock, $40,000. Number of shares, 400.—Amount of each share, $100.

Corporate Members.—Warwick Fielding Chipman, advocate; Francis George Bush, bookkeeper; George Robert Drennan, stenographer; Michael Joseph O'Brien, and Herbert William Jackson, clerks, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1900, *Canada Gazette*, 1918-19.

"DOMINION RUBBER SYSTEM (QUEBEC), LIMITED."

(As a private company.)

Incorporated November 26, 1918. - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Errol Malcolm McDougall, John Jennings Creelman, Pierre François Casgrain, Leslie Gordon Bell, and Sadi Conrad Demers, advocates, John Buchanan Henderson, and Florence Seymour Bell, clerks; Beatrice Isolde Brandt, stenographer, and Fernand Jules Dufresne, student-at-law, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1916, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"MANUFACTURERS AND DISTRIBUTORS, LIMITED."

Incorporated November 26, 1918. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John Charles Fennell and Richard Joseph Kennedy, of Hamilton, Ont., clerks; Harold Wilmer Dickin, clerk, and Mary Eliza Mills, spinster, of Guelph, Ont.; Mabel Heslop, of Owen Sound, Ont.; spinster.
First or Provisional Directors.—John Charles Fennell, Harold Wilmer Dickin and Mary Eliza Mills.
Chief place of Business.—Hamilton, Ont.
Objects of the Company.—*Vide* p. 1900, *Canada Gazette*, 1918-19.

"DOMINION RUBBER SYSTEM (MANITOBA), LIMITED."

(As a private company.)

Incorporated November 26, 1918. - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Errol Malcolm McDougall, John Jennings Creelman, Pierre François Casgrain, Leslie Gordon Bell and Sadi Conrad Demers, advocates; John Buchanan Henderson and Florence Seymour Bell, clerks; Beatrice Isolde Brandt, stenographer, and Fernand Jules Dufresne, student-at-law, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Winnipeg, Man.
Objects of the Company.—*Vide* p. 1910, *Canada Gazette*, 1918-19.

"ANTOINETTE HAT SHOPS, LIMITED."

Incorporated November 26, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John Charles Fennell and Richard Joseph Kennedy, of Hamilton, Ont., clerks; Harold Wilmer Dickin, clerk, and Mary Eliza Mills, spinster, of Guelph, Ont.; Mabel Heslop, of Owen Sound, Ont., spinster.
First or Provisional Directors.—John Charles Fennell, Harold Wilmer Dickin and Mary Eliza Mills.
Chief place of Business.—Hamilton, Ont.
Objects of the Company.—*Vide* p. 1901, *Canada Gazette*, 1918-19.

"DOMINION RUBBER SYSTEM (PACIFIC), LIMITED."

(As a private company.)

Incorporated November 26, 1918. - - - - - - - Amount of capital stock, $250,000. Number of shares, 2,500.—Amount of each share, $100.

Corporate Members.—Errol Malcolm McDougall, John Jennings Creelman, Pierre François Casgrain, Leslie Gordon Bell and Sadi Conrad Demers, advocates; John Buchanan Henderson and Florence Seymour Bell, clerks; Beatrice Isolde Brandt, stenographer, and Fernand Jules Dufresne, student-at-law, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Vancouver, B.C.
Objects of the Company.—*Vide* p. 1915, *Canada Gazette*, 1918-19.

"DOMINION RUBBER SYSTEM, LIMITED."

(As a private company.)

Incorporated November 26, 1918. - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Errol Malcolm McDougall, John Jennings Creelman, Pierre François Casgrain, Leslie Gordon Bell and Sadi Conrad Demers, advocates; John Buchanan Henderson and Florence Seymour Bell, clerks; Beatrice Isolde Brandt, stenographer, and Fernand Jules Dufresne, student-at-law, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1907, *Canada Gazette*, 1918-19.

"DOMINION RUBBER SYSTEM (ONTARIO), LIMITED."

(As a private company.)

Incorporated November 26, 1918. - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Errol Malcolm McDougall, John Jennings Creelman, Pierre François Casgrain, Leslie Gordon Bell and Sadi Conrad Demers, advocates; John Buchanan Henderson and Florence Seymour Bell, clerks; Beatrice Isolde Brandt, stenographer, and Fernand Jules Dufresne, student-at-law, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 1913, *Canada Gazette*, 1918-19.

"FEDERAL LUMBER COMPANY, LIMITED."

(As a Private Company.)

Incorporated November 26, 1918. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—William Clark, of Alta Vista, B.C., barrister and solicitor, Edward Bliss Day and Paul Day, lumbermen, and Rachel Day, married woman, of Kerrisdale, B.C., William Horsburgh Crowe, lumberman, and Sarah Harriet Crowe, married woman, of Vancouver, B.C.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Vancouver, B.C.
Objects of the Company.—*Vide* p. 1905, *Canada Gazette*, 1918-19.

"DOMINION RUBBER SYSTEM (ALBERTA) LIMITED."

(As a Private Company.)

Incorporated November 26, 1918. - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Errol Malcolm McDougall, John Jennings Creelman, Pierre François Casgrain, Leslie Gordon Bell, and Sadi Conrad Demers, advocates, John Buchanan Henderson and Florence Seymour Bell, clerks, Beatrice Isolde Brandt, stenographer, and Fernand Jules Dufresne, student-at-law, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Calgary, Alta.
Objects of the Company.—*Vide* p. 1908, *Canada Gazette*, 1918-19.

"DOMINION RUBBER SYSTEM (MARITIME) LIMITED."

(As a Private Company.)

Incorporated November 27, 1918. - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Errol Malcolm McDougall, John Jennings Creelman, Pierre François Casgrain, Leslie Gordon Bell, and Sadi Conrad Demers, advocates, John Buchanan Henderson, and Florence Seymour Bell, clerks, Beatrice Isolde Brandt, stenographer, and Fernand Jules Dufresne, student-at-law, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief Place of Business.—St. John, N.B.

Objects of the Company.—*Vide* p. 1912, *Canada Gazette*, 1918-19.

"DOMINION RUBBER SYSTEM (SASKATCHEWAN) LIMITED."

(As a Private Company.)

Incorporated November 27, 1918. - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Errol Malcolm McDougall, John Jennings Creelman, Pierre François Casgrain, Leslie Gordon Bell, and Sadi Conrad Demers, advocates, John Buchanan Henderson, and Florence Seymour Bell, clerks, Beatrice Isolde Brandt, stenographer, and Fernand Jules Dufresne, student-at-law, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Regina, Sask.

Objects of the Company.—*Vide* p. 1918, *Canada Gazette*, 1918-19.

"NORTH BAY FISH COMPANY, LIMITED."

Incorporated November 27, 1918. - - - - - - Amount of capital stock, $10,000. Number of shares, 100.—Amount of each share, $100.

Corporate Members.—William Alexander Henry, King's Counsel; Ingram Oakes, John Erskine Read and James McGregor Stewart, barristers-at-law; and Henry Charles Winterbourne Powell, accountant; all of Halifax, N.S.

First or Provisional Directors.—John Erskine Read, James McGregor Stewart and Henry Charles Winterbourne Powell.

Chief place of Business.—North Ingonish, N.S.

Objects of the Company.—*Vide* p. 1899, *Canada Gazette*, 1918-19.

"MACPHERSON MANUFACTURING COMPANY, LIMITED."

Incorporated, November 27, 1918. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John Alexander MacPherson, manufacturer; Leonard Thornhill Hibbert and Percy Leonard Phillips, machinists; Duncan McDonald, traveller; and John Maynard Greer, merchant; all of Hamilton, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 1899, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued November 28, 1918, to

"RIBBONS, LIMITED."

Increasing the capital stock of the said company from the sum of $50,000 to the sum of $250,000, being an addition of 2,000 shares of $100 to the present capital stock. *Vide* p. 1898, *Canada Gazette*, 1918-19.

"FLEXIBLE METALLIC PACKING COMPANY, LIMITED."

Incorporated, November 28, 1918. - - - - - - Amount of capital stock, $25,000. Number of shares, 250.—Amount of each share, $100.

Corporate Members.—William Howard Burnham and Frank Wadsworth Prentice, of Adrian, Mich., U.S.A., manufacturers; Frank Edward Payne, of Glencoe, Ill., U.S.A., manufacturer; Arthur Warren Payne, of Chicago, Ill., U.S.A., manufacturer; and William Anderson Leitch, of Windsor, Ont., manufacturer.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Windsor, Ont.

Objects of the Company.—*Vide* p. 1901, *Canada Gazette*, 1918-19.

"THE CANADIAN BAKERY, LIMITED."

"LA BOULANGERIE CANADIENNE, LIMITEE."

Incorporated, November 29, 1918. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Albert Sabourin, baker; Arthur Raymond Farley, druggist; Joseph Eugene Couture and Evanhoe Couture, accountants; and Edgar Laberge, notary; all of Hull, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Hull, Que.

Objects of the Company.—*Vide* p. 1958, *Canada Gazette*, 1918-19.

"THE FORD-SMITH MACHINE COMPANY, LIMITED."

Incorporated November 30, 1918. - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Archibald Hope Gibson, Gabriel Herman Levy and Charles Hugh Higgins, barristers-at-law; Anna May Herriman, bookkeeper, and Ella Claire Becker, stenographer; all of Hamilton, Ont.

First or Provisional Directors.—Archibald Hope Gibson, Gabriel Herman Levy and Charles Hugh Higgins.

Chief place of Business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 1903, *Canada Gazette*, 1918-19

"TURNBULL ELEVATOR COMPANY, LIMITED."

Incorporated November 30, 1918. - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—John Harvey Turnbull, manufacturer; Loretta Duggan, and Gertrude Fingerhut, stenographers; and Alexander Robertson Cochrane and Gordon Nicholas Shaver, solicitors; all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1985, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"CANADIAN AVRO COMPANY, LIMITED."

Incorporated November 30, 1918. - - - - - - Amount of capital stock, $2,500,000. Number of shares, 500,000.—Amount of each share, $5.

Corporate Members.—Stanley Edward Elkin, manufacturer; and Stanley Seovil Wetmore and Burpee Macleod Hay, brokers; of Saint John, N.B.; Ernest Allan Schofield, of Hampton, N.B., merchant; John Robert Miller, of Rothesay, N.B., accountant.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Saint John, N.B.

Objects of the Company.—*Vide* p. 1906, *Canada Gazette*, 1918-19.

"NEW BRASSWARE COMPANY OF CANADA, LIMITED."

Incorporated November 30, 1918. - - - - - - Amount of capital stock, $10,000. Number of shares, 400.—Amount of each share, $25.

Corporate Members.—Charles Lévesque, machinist; Joseph Louis Labrosse, broker; Simon Labrosse, clerk; and Charles Alfred Dupont, and Georges Dupont, physicians; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1906, *Canada Gazette*, 1918-19.

"UNITED PAPER BOX COMPANY, LIMITED."

(As a private company.)

Incorporated December 2, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500—Amount of each share, $100.

Corporate Members.—Gerald Augustine Coughlin, advocate; Francis George Bush, book-keeper; George Robert Drennan, stenographer; and Herbert William Jackson, and Michael Joseph O'Brien, clerks; all of Montreal, Que.

First or Provisional—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1991, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued December 3, 1918, to

"SCOTTISH CANADIAN MAGNESITE COMPANY, LIMITED,"

Increasing the capital stock of the said company from the sum of $600,000 to the sum of $1,000,000, being an addition of 4,000 shares of $100 each to the present capital stock.

Vide p. 1984, *Canada Gazette*, 1918-19.

"SALES IMPROVEMENT, LIMITED"

(As a private company.)

Incorporated December 3, 1918. - - - - - - - Amount of capital stock, $45,000. Number of shares, 45,000—Amount of each share, $1.

Corporate Members.—J. Ogle Carss, barrister-at-law; Frederick Archibald Boyer, Broker; Charles Almond Patton, accountant; Edmund Earle Hampson, agent; Clara Gertrude Dowler, stenographer; all of Ottawa, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 1987, *Canada Gazette*, 1918-19.

"THE CANADIAN CUSHION INNER TIRE AND RUBBER COMPANY, LIMITED."

Incorporated December 4, 1918. - - - - - - - Amount of capital stock, $40,000. Number of shares, 400—Amount of each share, $100.

Corporate Members.—Lachlan Kennedy, automobile salesman; and Jesse Button, agent, of Wingham, Ont.; Sydney MacBrien, of Toronto, Ont., broker; William Forrester, of Mitchell, Ont., flax manufacturer; and John Joseph O'Shannessy, of San José, Cal., U.S.A., general agent.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Wingham, Ont.
Objects of the Company.—*Vide* p. 2054, *Canada Gazette*, 1918-19.

"THREE RIVERS SHIPYARDS, LIMITED."

(As a private company.)

Incorporated December 4, 1918. - - - - - - - Amount of capital stock, $2,000.000. Number of shares, 20,000—Amount of each share, $100.

Corporate Members.—François Philippe Brais, advocate; Marie Zaire Pilon, Laura May Smith, and Ella Jackson, stenographers; and Lily Copping, clerk; all of Montreal, Que.
First or Provisional Directors.—François Philippe Brais, Marie Zaire Pilon, and Laura May Smith.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1989, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued December 5, 1918, to

"JOHN DUNCAN & COMPANY, LIMITED,"

Changing the corporate name of the said company to that of

"CARTER, MACY & COMPANY OF CANADA, LIMITED."

Vide p. 1984, *Canada Gazette*, 1918-19.

"CANADIAN HANDKERCHIEFS, LIMITED."

(As a private company.)

Incorporated December 5, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Walter Robert Lorimer Shanks, advocate, Francis George Bush, book-keeper, George Robert Drennan, stenographer, Herbert William Jackson, and Michael Joseph O'Brien, clerks, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1993, *Canada Gazette*, 1918-19.

"BRITISH REFRACTORIES CORPORATION, LIMITED."

Incorporated December 5, 1918. - - - - - - - Amount of capital stock, $750,000. Number of shares, 7,500.—Amount of each share, $100.

Corporate Members.—Louis Athanase David and Louis Philippe Crépeau, both of His Majesty's Counsel learned-in-the-law, Segfried Hinson Read Bush, advocate, George Whittaker, accountant, and John Parker Callaghan, student-at-law, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1992, *Canada Gazette*, 1918-19.

"THE CRESCENT WAIST COMPANY, LIMITED."

(As a Private Company.)

Incorporated December 6, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Henry Weinfield and Marcus Meyer Sperber, advocates, Benjamin Schulman, student-at-law, and Sarah Miller, and Elsie Bramson, stenographers, all of Montreal, Que.
First or Provisional Directors.—Henry Weinfield, Marcus Meyer Sperber and Benjamin Schulman.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 1993, *Canada Gazette*, 1918-19.

"THE STANDARD CABINET COMPANY, LIMITED."

Incorporated December 7, 1918. - - - - - - - Amount of capital stock, $95,000. Number of shares, 950.—Amount of each share, $100.

Corporate Members.—Ben Bernstein, advocate, Robert Stanley Weir, King's Counsel, Florence Cannon and Mary Cecilia Callaghan, secretaries, and Frank Gilman Dort, agent, all of the city of Montreal, Que.
First or Provisional Directors.—Ben Bernstein, Robert Stanley Weir and Florence Cannon.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2056, *Canada Gazette*, 1918-19.

"ENGLISH ELECTRIC COMPANY, LIMITED."

Incorporated, December 7, 1918. - - - - - - - Amount of capital stock, $5,000. Number of shares, 50.—Amount of each share, $100.

Corporate Members.—James Steller Lovell and Ernest Harold Stewart, accountants; William Bain, book-keeper; Robert Gowans and John Henry, solicitors' clerks, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 1986, *Canada Gazette*, 1918-19.

"QUEBEC PAPER SALES COMPANY, LIMITED."

Incorporated, December 9, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Gordon Walters MacDougall and Lawrence Macfarlane, both of His Majesty's Counsel learned-in-the-law, William Bridges Scott, advocate, and James Geary Cartwright, office manager, all of Montreal, Que., and Linton Hossie Ballantyne, of Westmount, Que., advocate.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 1991, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued December 11, 1918, to

"THE CREDIT CLEARING HOUSE OF CANADA, LIMITED."

Extending the powers of the said company.

Vide p. 2049, *Canada Gazette*, 1918-19.

"McCOLL BROTHERS, LIMITED."

(As a private company.)

Incorporated, December 12, 1918. - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—John Wolfe McColl and Brian Bedingfield McColl, oil operators; Emma McColl, widow; Imogen Coleman, stenographer, and Franklin Wellington Wegenast, barrister, all of Toronto, Ont.

First or Provisional Directors.—John Wolfe McColl, Brian Bedingfield McColl and Emma McColl.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 2783, *Canada Gazette*, 1918-19.

"OCEAN CARGO CARRIERS COMPANY, LIMITED."

(As a private company.)

Incorporated, December 12, 1918. - - - - - - - Amount of capital stock, $5,000. One thousand shares without nominal or par value.

Corporate Members.—Joseph Max Bullen, Harold Learoyd Steele, and Norman Stuart Robertson, barristers-at-law; Agnes Porter Traill, accountant, and Lena Duff, stenographer, all of Toronto, Ont.

First or Provisional Directors.—Joseph Max Bullen, Harold Learoyd Steele and Norman Stuart Robertson.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 2051, *Canada Gazette*, 1918-19.

"DOVER'S, LIMITED."

Incorporated December 13, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Abraham Saul Cohen, accountant; Lillian Freedman, stenographer; Joseph Philip Beaupré, bailiff; Henry Emo, book-keeper, and Ben Bernstein, advocate, all of Montreal, Que.

First or Provisional Directors.—Abraham Saul Cohen, Ben Bernstein and Henry Emo.

Chief place of Business.—Cornwall, Ont.

Objects of the Company.—*Vide* p. 2049, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

Supplementary Letters Patent issued December 13, 1918, to

"PULP AND PAPER MILLS SUPPLY COMPANY, LIMITED."

Changing the corporate name of the said company to that of

"PULP AND PAPER MILL ACCESSORIES, LIMITED."

Vide p. 2049, *Canada Gazette*, 1918-19.

"ANGLO CANADIAN FINANCIAL CORPORATION, LIMITED."

Incorporated December 14, 1918. - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—David Inglis Grant, Gideon Grant, Mervil MacDonald and Edwin Smily, barristers-at-law, and Aileen Silk, student-at-law, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 2113, *Canada Gazette*, 1918-19.

"THE WALTER WALTON CO., LIMITED."

Incorporated December 14, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Nathan Philips, George Francis Rooney and William Henry McGuire, barristers-at-law, and Anna McCartney and Florence Alice Sweet, stenographers, all of Toronto, Ont.

First or Provisional Directors.—Nathan Philips, George Francis Rooney and William Henry McGuire.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 2115, *Canada Gazette*, 1918-19.

"COKE & COALS, LIMITED."

Incorporated December 14, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Walter Robert Lorimer Shanks, advocate; Francis George Bush, book-keeper; George Robert Drennan, stenographer; Herbert William Jackson and Michael Joseph O'Brien, clerks, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2057, *Canada Gazette*, 1918-19.

"CANADA CLOTHING CO., LIMITED."

Incorporated December 14, 1918. - - - - - - - Amount of capital stock, $30,000. Number of shares, 300.—Amount of each share, $100.

Corporate Members.—Abraham Saul Cohen, accountant, Ben Bernstein, advocate, Henry Emo, bookkeeper, Lillian Freedman, stenographer, and Joseph Philip Beaupré, bailiff, all of Montreal, Que.

First or Provisional Directors.—Abraham Saul Cohen, Ben Bernstein and Henry Emo.

Chief place of Business.—Smith's Falls, Ont.

Objects of the Company.—*Vide* p. 2055, *Canada Gazette*, 1918-19.

"W. D. MORRIS REALTY, LIMITED."

(As a private company.)

Incorporated December 14, 1918. - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—William Dowler Morris, warehouseman, Robert George Code, and Edmund Foster Burritt, barristers-at-law, Gertrude Maud Sibley and Eva Victoria Spence, stenographers, all of Ottawa, Ont.
First or Provisional Directors.—William Dowler Morris, Robert George Code and Edmund Foster Burritt.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 2288, *Canada Gazette,* 1918-19.

"DALYTE ELECTRIC, LIMITED."

Incorporated, December 14, 1918. - - - - - Amount of capital stock, $1,000,000. 2,500 preferred shares and 7,500 common shares of $100 each.

Corporate Members.—Leo William Goetz, solicitor, Helen McTague, bookkeeper, Elizabeth Gledden Winlow and Pearl Yates, stenographers, John Sutherland, junior, insurance agent, Edith Fay Chisholm, librarian, and Rita Laura Scriven, clerk, all of Guelph, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Guelph, Ont.
Objects of the Company.—*Vide* p. 2050, *Canada Gazette,* 1918-19.

"T. G. McLAURIN COMPANY, LIMITED."

Incorporated, December 16, 1918. - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—Eratus Edwin Howard, King's Counsel, Jacob DeWitt and Harold Ernest Andrews Rose, advocates, Henry Charles McNeil, accountant, and Oswald Fletcher Edwards, clerk, all of Montreal, Que.
First or Provisional Directors.—Jacob DeWitt, Harold Ernest Andrews Rose and Henry Charles McNeill.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2111, *Canada Gazette,* 1918-19.

"AUTO-INDICATOR SALES COMPANY OF EASTERN CANADA, LIMITED."

Incorporated December 16, 1918. - - - - - - Amount of capital stock, $25,000. Number of shares, 250—Amount of each share, $100.

Corporate Members.—Thomas Coward Kirby, secretary; Ernest Poulin, physician; Joseph A. Chevalier, civil employee; and Alexandre Mongeon, merchant, of Montreal, Que.; and Lorenzo de Vaudreuil, book-keeper, of Outremont, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company,—*Vide* p. 560, *Canada Gazette,* 1918-19

"THE NORTHERN GRAIN COMPANY, LIMITED."

Incorporated December 16, 1918. - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000—Amount of each share, $100.

Corporate Members.—John Nahum Sternburg, and Abraham Henry Goldberg, brokers; Ruth Sternburg, and Marcia Goldberg, married women; and Harry Friedman, barrister; all of Edmonton, Alta.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Edmonton, Alta.
Objects of the Company.—*Vide* p. 2052, *Canada Gazette,* 1918-19.

"JOHN W. GATES, LIMITED."

Incorporated December 17, 1918. - - - - - - Amount of capital stock, $19,000. Number of shares, 490—Amount of each share, $100.

Corporate Members.—Charles Holdstock, journalist; Hector Langevin, Rene Bourdon, Yvon Ducharme, accountants; and Lea Clement, stenographer; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2112, *Canada Gazette,* 1918-19.

"CANADA WESTERN PRODUCTS, LIMITED."

Incorporated December 17, 1918. - - - - - - Amount of capital stock, $1,500,000. Number of shares, 15,000—Amount of each share, $100.

Corporate Members.—Stanley Metcalfe Clark, Stanley Gardner Metcalfe, and Harold Fisher, barristers-at-law; Linda Bonell, and Ada Abelson, stenographers, all of Ottawa, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Vancouver, B.C.
Objects of the Company.—*Vide* p. 2053, *Canada Gazette,* 1918-19.

"EADIE-McNEILLY CONSTRUCTION COMPANY, LIMITED."

(As a private company.)

Incorporated December 17, 1918. - - - - - - Amount of capital stock, $50,000. Number of shares, 500—Amount of each share, $100.

Corporate Members.—John Eadie, contractor; and Wilma Ethel Coughtry, stenographer, both of Montreal, Que.; Dame Henry Edna Larthard, widow of late Charles Kinley McNeilly, of Ste. Agathe des Monts, Que.; and Stephen John LeHuray, advocate; and Charles Henry Anerum, accountant, both of Westmount, Que.
First or Provisional Directors.—John Eadie, Stephen John LeHuray, and Charles Henry Anerum.
Chief place of Business.—Ste. Agathe des Monts, Que.
Objects of the Company.—*Vide* p. 2115, *Canada Gazette,* 1918-19.

"THE GRAVEL LUMBER COMPANY, LIMITED."

Incorporated December 18, 1918. - - - - - - - Amount of capital stock, $600,000. Number of shares, 6,000.—Amount of each share, $100.

Corporate Members.—Sir William Price, Henry Edward Price and Arthur John Price, of Quebec, Que., lumber merchants; Alfred Samuel Gravel and Louis Gédéon Gravel, of Lévis, Que., lumber merchants, Joseph Gravel, of St. Telesphore, Que., lumber merchant.

First or Provisional Directors.—Sir William Price, Henry Edward Price, Arthur John Price and Alfred Samuel Gravel.

Chief place of Business.—Lévis, Que.

Objects of the Company.—*Vide* p. 2110, *Canada Gazette*, 1918-19.

"FORHAN'S, LIMITED."

Incorporated December 19, 1918. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Arthur Lorne Reid, barrister-at-law; William Walter Perry, secretary; Charles Herbert Croft Leggott, Archibald MacLean Borthwick, Edna Fitzsimmons, accountants, and Nellie MacDonald, stenographer, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2206, *Canada Gazette*, 1918-19.

"OTTAWA VALLEY LUMBER COMPANY, LIMITED."

(As a private company.)

Incorporated December 19, 1918. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Walter Robert Lorimer Shanks, advocate, Francis George Bush, book-keeper, George Robert Drennan, stenographer, Herbert William Jackson, and Michael Joseph O'Brien, clerks, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2110, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued December 29, 1918, to

"THE B.C. MILK CONDENSING COMPANY, LIMITED."

Decreasing the capital stock of the said company from the sum of $120,000 to the sum of $5,000, such decreased capital stock to consist of 50 shares of $100 each.

Vide p. 2151, *Canada Gazette*, 1918-19.

"ASSOCIATED AGENCIES, LIMITED."

Incorporated December 20, 1918. - - - - - - - Amount of capital stock, $20,000. Number of shares, 800.—Amount of each share, $25.

Corporate Members.—John William Wood, financial broker, Mary Wood, married woman, Sidney Wood, and Henry Herbert Rendall, clerks, and Adam Stuart Matheson, barrister, all of Edmonton, Alta.

First or Provisional Directors.—John William Wood, Sidney Wood and Adam Stuart Matheson.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 2151, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"FLAX PULLER COMPANY, LIMITED."

Incorporated December 24, 1918. - - - - - - - Amount of capital stock, $100,000. Number of shares, 10,000.—Amount of each share, $10.

Corporate Members.—Archibald Hope Gibson, and Charles Hugh Higgins, barristers-at-law, Anna May Herriman, book-keeper, Rose Marie O'Brien, and Ella Claire Becker, stenographers, all of Hamilton, Ont.
First or Provisional Directors.—Archibald Hope Gibson, Charles Hugh Higgins and Anna May Herriman.
Chief place of Business.—Hamilton, Ont.
Objects of the Company.—*Vide* p. 2153, *Canada Gazette*, 1918-19.

FOSTER, BARRETT, RIEPERT & LOW, LIMITED."

(As a private company.)

Incorporated December 24, 1918 - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Waldo Whittier Skinner, King's Counsel; George Gordon Hyde and John Gerald Ahearn, advocates; Ronald Cameron Grant, accountant, and Elizabeth Russell McKenzie, stenographer, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2151, *Canada Gazette*, 1918-19.

"CHEMICAL SCIENTIFIC ENGRAVERS, LIMITED."

Incorporated December 24, 1918 - - - - - - - Amount of capital stock, $25,000. Number of shares, 500.—Amount of each share, $50.

Corporate Members.—William Elgie Bland and William Mason Rooke, consulting engineers; Thomas Noel Bland, chartered accountant; Edith Bland, married woman, and William George McLachlan, manager, all of Vancouver, B.C.
First or Provisional Directors.—William Elgie Bland, William Mason Rooke and William George McLachlan.
Chief place of Business.—Vancouver, B.C.
Objects of the Company.—*Vide* p. 2153, *Canada Gazette*, 1918-19.

CAM FISH COMPANY, LIMITED.

Incorporated December 26, 1918. - - - - - - - Amount of capital stock, $40,000. Number of shares, 400.—Amount of each share, $100.

Corporate Members.—Molyneux Lockhart Gordon, barrister-at-law; Willis Bertram Sturrup, law clerk; Mary Harper MacGregor and Hazel Leona Neville, stenographers, and Millie Harriett Croucher, filing clerk, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2155, *Canada Gazette*, 1918-19.

"NATIONAL CULTURE ASSOCIATION, LIMITED."

Incorporated December 26, 1918. - - - - - - Amount of capital stock, $150,000. Number of shares, 15,000.—Amount of each share, $10.

Corporate Members.—Louis Athanase David and Louis Philippe Crepeau, both of His Majesty's Counsel learned-in-the-law; Segfried Hinson Read Bush and Benjamin Robinson, advocates, and George Whittaker, accountant, all of Montreal, Que.

First or Provisional Directors.—Louis Athanase David, Louis Philippe Crepeau and Segfried Hinson Read Bush.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2152, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued December 27, 1918, to

"DOMINION DREDGING COMPANY, LIMITED."

Decreasing the capital stock of the said company from the sum of $500,000 to the sum of $191,300, such decreased capital stock to consist of 1,913 shares of $100 each.

Vide p. 2150, *Canada Gazette,* 1918-19.

"NATHAN LANDE COMPANY, LIMITED."

(As a private company.)

Incorporated December 27, 1918. - - - - - Amount of capital stock, $35,000. Number of shares, 350.—Amount of each share, $100.

Corporate Members.—Henry Weinfield, Marcus Meyer Sperber, and Jacob Yale Fortier, advocates, and Sarah Miller and Elsie Bramson, stenographers, all of Montreal, Que.

First or Provisional Directors.—Henry Weinfield, Marcus Meyer Sperber and Jacob Yale Fortier.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2154, *Canada Gazette,* 1918-19.

"CANADIAN VOYAGEUR, LIMITED."

Incorporated December 30, 1918. - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Gerard Ruel and Reginald Herbert Montague Temple, barristers-at-law; George Norman Limpricht, recording officer; Robert Phipps Ormsby, secretary, and Robert Charles Vaughan, assistant to the president, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 2205, *Canada Gazette,* 1918-19.

"BOCK & TETREAU, LIMITED."

Incorporated December 30, 1918. - - - - - - Amount of capital stock, $40,000. Number of shares, 800.—Amount of each share, $50.

Corporate Members.—Hector Joseph Tétreau, lumber merchant; Hedwidge Bock, Cordélie Tétreau and Adrienne Valois, spinsters, and Benjamin Benoit, advocate, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2210, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued December 30, 1918, to

"STANDARD CHEMICAL, IRON AND LUMBER COMPANY OF CANADA, LIMITED."

Changing the corporate name of the said company to that of

"STANDARD CHEMICAL COMPANY, LIMITED."

Vide p. 2205, *Canada Gazette*, 1918-19.

"CANADIAN GOVERNMENT MERCHANT MARINE, LIMITED."

Incorporated December 30, 1918. - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Gerard Ruel, barrister-at-law; Lorne William Mitchell, treasurer; Wilfred Bankart Langmore, solicitor; Charles Durno Cowie, secretary, and Frederick Joseph Buller, paymaster, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2209, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued December 31, 1918, to

"GENERAL MOTORS OF CANADA, LIMITED."

Increasing the capital stock of the said company from the sum of $1,000,000 to the sum of $10,000,000, being an addition of 90,000 shares of $100 each to the present capital stock.

Vide p. 2205, *Canada Gazette*, 1918-19.

"THE C. H. DOERR COMPANY, LIMITED."

Incorporated January 1, 1919. - - - - - - Amount of capital stock, $250,000. Number of shares, 2,500.—Amount of each share, $100.

Corporate Members.—Charles Henry Doerr, manufacturer; Ralph Bethel Doerr and Edward Doerr, shippers; and John William Fraser, commercial traveller, all of Kitchener, Ont.; and Herman Williams, of New Hamburg, Ont., commercial traveller.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Kitchener, Ont.
Objects of the Company.—*Vide* p. 2212, *Canada Gazette*, 1918-19.

"CANADIAN PIONEER, LIMITED."

Incorporated January 2, 1919. - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Gerard Ruel and Reginald Herbert Montague Temple, barristers-at-law; George Norman Limpricht, recording officer; Robert Phipps Ormsby, secretary; and Robert Charles Vaughan, assistant to the president, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2206, *Canada Gazette*, 1918-19.

"THE BANNOCKBURN CLOTHING COMPANY, LIMITED."

Incorporated January 3, 1919. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Peter Bercovitch, King's Counsel; Ernest Lafontaine and Nathan Gordon, advocates; James Johnston, accountant; and Max Liverman, student, all of Montreal, Que.
First or Provisional Directors.—Peter Bercovitch, Ernest Lafontaine and Nathan Gordon.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2210, *Canada Gazette*, 1918-19.

"MODERN CREAMERY CO., LIMITED."

"COMPAGNIE DE CREAMERIE MODERNE, LIMITEE."

Incorporated January 3, 1919. - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—Félix Larivière, and Narcisse Mantha, gardeners; Roméo Martineau, manufacturer, and Dédime Mathias Gélinas, merchant, all of Montreal, Que.; and Achille Polydore LeBire, manufacturer, of Houlton, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2207, *Canada Gazette*, 1918-19.

"VANDEWEGHE, LIMITED."

Incorporated January 3, 1919. - - - - - Amount of capital stock, $49,000. Number of shares, 490.—Amount of each share, $100.

Corporate Members.—Walter Seely Johnson, advocate; Alexander Rives Hall, King's Counsel; Josie Edwards and Susan Gertrude O'Brien, secretaries, and Arthur John England, accountant, all of Montreal, Que.
First or Provisional Directors.—Walter Seely Johnson, Alexander Rives Hall and Josie Edwards.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2211, *Canada Gazette*, 1918-19.

"CANADIAN BOAT AND ENGINE EXCHANGE, LIMITED."

Incorporated January 3, 1919. - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Charles O'Peters, manufacturers' agent, John James Main and John George Pickard, contractors, William John McWhinney, Esquire, and Frederick Robinson Marshall, student, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2273, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"CANADIAN BRAID AND TRIMMING COMPANY, LIMITED."

Incorporated January 3, 1919. - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Isidore Ballon, Barnard Goldenberg, and Abraham Wilfred Muhlstock, advocates; Laurence Tannenbaum, notary, and Max Leon Levin, merchant, all of Montreal, Que.

First or Provisional Directors.—Isidore Ballon, Laurence Tannenbaum, and Max Leon Levin.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2209, *Canada Gazette*, 1918-19.

"THE SMART-TURNER MACHINE COMPANY, LIMITED."

Incorporated January 4, 1919. - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—William Gregory Smart and John Alexander Turner, manufacturers, James Chisholm and Thomas Baker McQuesten, barristers, and Helen Archibald, book-keeper, all of Hamilton, Ont.

First or Provisional Directors.—William Gregory Smart, John Alexander Turner, and James Chisholm.

Chief place of Business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 2208, *Canada Gazette*, 1918-19.

"INTERNATIONAL EXPORT & IMPORT COMPANY, LIMITED."

(As a private company.)

Incorporated January 7, 1919. - - - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—François Philippe Brais, advocate, and Laura May Smith, Ella Mary Jackson, Bessie Mary Rogers, and Lily May Copping, stenographers, all of Montreal, Que.

First or Provisional Directors.—François Philippe Brais, Laura May Smith and Ella Mary Jackson.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2274, *Canada Gazette*, 1918-19.

"JOHN E. RIDDELL & SON, LIMITED."

Incorporated January 7, 1919. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—John Ewen Riddell, the elder, and John Ewen Riddell, the younger, contractors, Hannah Riddell, married woman, James Chisholm and Thomas Baker McQuesten, barristers, all of Hamilton, Ont.

First or Provisional Directors.—John Ewen Riddell, sr., John Ewen Riddell, jr., and Hannah Riddell.

Chief place of Business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 2275, *Canada Gazette*, 1918-19.

"R. STEWART, SON & CUNNINGHAM, LIMITED."

Incorporated January 7, 1919. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Thomas Arthur Beament, Alan Haskett Armstrong, barristers-at-law; Leonard Charles Frewin, accountant, Mona Devine and Myrtle Corr, stenographers, all of Ottawa, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business,—Ottawa, Ont.
Objects of the Company.—*Vide* p. 2207, *Canada Gazette* 1918-19.

"HYDE ENGINEERING WORKS, LIMITED."

Incorporated January 8, 1919. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Errol Languedoc, King's Counsel, Colville Sinclair, Ralph Erskin Allan, and Jean Pierre Charbonneau, advocates, and William Taylor, manager, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2281, *Canada Gazette*, 1918-19.

"R. SYKES MULLER CO., LIMITED."

Incorporated January 8, 1919. - - - - - - - - Amount of capital stock, $49,000. Number of shares, 490.—Amount of each share, $100.

Corporate Members.—Robert Sykes Muller, advertising agent, Norman Gilchrist Davis, and Charles Frederick Goldthwaite, salesmen, Walter Seely Johnson, barrister, and Rhoda Mary Husband, secretary, all of Montreal, Que.
First or Provisional Directors.—Robert Sykes Muller, Norman Gilchrist Davis and Charles Frederick Goldthwaite.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2276, *Canada Gazette*, 1918-19.

"THE GASPE SHIPBUILDING & TRADING COMPANY, LIMITED."

Incorporated January 8, 1919. - - - - - - - - Amount of capital stock, $75,000. Number of shares, 750.—Amount of each share, $100.

Corporate Members.—Alfred Lacouvée, master mariner, Horatio Joseph Hyman, merchant, Thomas Halliday Jopling, gentleman, John Baker, hotel-keeper, Richard Herbert Gould, banker, Russell Coffin, mariner, and Herbert Sutton Leboutillier, insurance and shipping agent, all of Gaspé, Que.
First or Provisional Directors.—The said corporate members.
Chief Place of Business.—Gaspé, Que.
Objects of the Company.—*Vide* p. 2274, *Canada Gazette*, 1918-19.

"S. V. NEVANAS CANADIAN COMPANY, LIMITED."

Incorporated January 9, 1919. - - - - - - - Amount of capital stock, $150,000. Number of shares, 1,500.—Amount of each share, $100.

Corporate Members.—Henry Noel Chauvin, King's Counsel; Harold Earle Walker, advocate; Hugh Wylie, accountant, and Inez Lillian MacCallum, stenographer, all of Montreal, Que.; and Christina Imrie, clerk, of Westmount, Que.
First or Provisional Directors.—Henry Noel Chauvin, Harold Earle Walker and Hugh Wylie.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2276, *Canada Gazette*, 1918-19.

"CANADIAN POTTERIES, LIMITED."

Incorporated January 9, 1919. - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—John MacNaughton, advocate; James Geary Cartwright, office manager; Edith Marjorie Isgar and Elsie Campbell Winter, stenographers, of Montreal, Que.; and Linton Hossie Ballantyne, of Westmount, Que., advocate.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—St. Johns, Que.
Objects of the Company.—*Vide* p. 2282, *Canada Gazette*, 1918-19.

"KIPAWA COMPANY, LIMITED."

Incorporated January 9, 1919. - - - - - - - Amount of capital stock, $20,000,000. Number of shares, 200,000.—Amount of each share, $100.

Corporate Members.—Gordon Walters MacDougall and Lawrence Macfarlane, both of His Majesty's Counsel learned-in-the-law; William Bridges Scott and Linton Hossie Ballantyne, advocates, and James Geary Cartwright, office manager, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2279, *Canada Gazette*, 1918-19.

"CANADIAN RECORDS PRESS, LIMITED."

Incorporated January 9, 1919. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—George Vincent Greene, clerk; Harry Burton Morton, manager, and Burton Frederick Bowler, secretary, all of Montreal, Que.; and Carl Edwin Allan, stenographer, and Lester Lett, clerk, both of Ottawa, Ont.
First or Provisional Directors.—George Vincent Green, Harry Burton Morton and Burton Frederick Bowler.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 2278, *Canada Gazette*, 1918-19.

"McCOY AUTO LOCK COMPANY, LIMITED."

Incorporated January 10, 1919. - - - - - - Amount of capital stock, $100,000.

Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Archibald Hope Gibson, barrister-at-law; Jessie Beatrice Peene, secretary; Anna May Herriman, book-keeper; Rose Marie O'Brien and Ella Claire Becker, stenographers, all of Hamilton, Ont.

First or Provisional Directors.—Archibald Hope Gibson, Anna May Herriman and Rose Marie O'Brien.

Chief place of Business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 2287, *Canada Gazette*, 1918-19.

"UNION IRON AND METAL COMPANY, LIMITED."

Incorporated January 10, 1919. - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—John O'Neill, John Campbell O'Brien, and Alfred Davis, manufacturers, and Norman Sommerville and Thomas Alfred Rowan, solicitors, all of Toronto, Ont.

First or Provisional Directors.—John O'Neill, John Campbell O'Brien and Alfred Davis.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 2285, *Canada Gazette*, 1918-19.

"AMERICAN DRUGGISTS SYNDICATE, LIMITED."

(As a Private Company.)

Incorporated, January 11, 1919. - - - - - - Amount of capital stock, $25,000. Number of shares, 250.—Amount of each share, $100.

Corporate Members.—Walter Robert Lorimer Shanks, advocate, Francis George Bush, book-keeper, George Robert Drennan, stenographer, Herbert William Jackson, and Michael Joseph O'Brien, clerks, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2279, *Canada Gazette*, 1918-19.

"ADANAC PRODUCING CO., LIMITED."

Incorporated, January 11, 1919. - - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—Joseph Horace Michaud, advocate, Léon Joseph Mouton, accountant, Archille Racicot, book-keeper, Léonie Joubert, secretary, and Annette Lafleur, stenographer, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2353, *Canada Gazette*, 1918-19.

"CLEATON COMPANY (CANADA), LIMITED."

(As a Private Company.)

Incorporated, January 11, 1919. - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Reinallt Ewart Cleaton, mechanical engineer, Henry John Hague, King's Counsel, Pierre Amable Badeaux, advocate, Herbert William Shearer, office manager, and Arthur Charters, accountant, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2280, *Canada Gazette*, 1918-19.

CLARK PRESSED METALS, LIMITED."

(As a Private Company.)

Incorporated, January 11, 1919. - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Frank Richardson and James White Bicknell, students-at-law, Willis Bertram Sturrup, law clerk, Bert Henry Luther Symmes and Craig McKay, barristers-at-law, all of Toronto, Ont.
First or Provisional Directors.—Frank Richardson, James White Bicknell and Willis Bertram Sturrup.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2277, *Canada Gazette*, 1918-19.

"KNOX BROTHERS, LIMITED."

Incorporated January 13, 1919. - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Henry Noel Chauvin, King's Counsel; Harold Earle Walker, advocate; Hugh Wylie, accountant, and Inez Lillian MacCallum, stenographer, all of Montreal, Que., and Christina Imrie, of Westmount, Que., clerk.
First or Provisional Directors.—Henry Noel Chauvin, Harold Earle Walker and Hugh Wylie.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide*, p. 2283, *Canada Gazette*, 1918-19.

"FYSHE & COMPANY, LIMITED."

Incorporated January 14, 1919. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Errol Languedoc, King's Counsel; Colville Sinclair, Ralph Erskin Allan and Jean Pierre Charbonneau, advocates, and William Taylor, manager, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2286, *Canada Gazette* 1918-19.

"THE SCOTT BROKERAGE COMPANY, LIMITED."

Incorporated January 14, 1919. - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—George Frederick Heber Long, Lorne Nelson Laidlaw, Ivan Cleveland Rand and Herbert Oliver Knowles, barristers-at-law, and John Henry Delf, student-at-law, all of Medicine Hat, Alta.

First or Provisional Directors.—George Frederick Heber Long, Herbert Oliver Knowles and John Henry Delf.

Chief place of Business.—Calgary, Alta.

Objects of the Company.—*Vide* p. 2347, *Canada Gazette*, 1918-19.

"THE PREMIER RUBBER COMPANY, LIMITED."

Incorporated January 14, 1919. - - - - - - Amount of capital stock $500,000. Divided into 2,500 preferred shares and 2,500 common shares of $100 each.

Corporate Members.—Charles Lawrence Dunbar and Leo William Goetz, solicitors; Helen McTague, book-keeper; Elizabeth Winlow, stenographer; and John Sutherland, the younger, insurance agent, all of Guelph, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Guelph, Ont.

Objects of the Company.—*Vide* p. 2344, *Canada Gazette*, 1918-19.

"THE CLEVELAND TRACTOR COMPANY OF CANADA, LIMITED."

Incorporated January 15, 1919. - - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—William George Bell, manufacturer; Ernest S. Wigle, solicitor, and Olive Seed, stenographer, of Windsor, Ont., and William Salisbury Doty, and James Vincent O'Neil, of Cleveland, Ohio, U.S.A., manufacturers.

First or Provisional Directors.—William George Bell, Ernest S. Wigle and William Salisbury Doty.

Chief place of Business.—Windsor, Ont.

Objects of the Company.—*Vide* p. 2344, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued January 16, 1919, to

"DALE & COMPANY, (LIMITED),"

Increasing the capital stock of the said company from the sum of $200,000 to the sum of $250,000, being an addition of 500 shares of $100 each to the present capital stock.

Vide p. 2342, *Canada Gazette*, 1918-19.

"BLACK RIVER PULPWOOD COMPANY, LIMITED."

Incorporated, January 16, 1919 - - - - Amount of capital stock, $400,000 Number of shares, 4,000.—Amount of each share, $100.

Corporate Members.—Laura May Smith, and Ella Jackson, stenographers, Jules Bruneau, student-at-law, and François Philippe Brais, and John Thomas Hackett, advocates, all of Montreal, Que.

First or Provisional Directors.—Jules Bruneau, François Philippe Brais, and John Thomas Hackett.

Chief Place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2345, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"PRINCE EDWARD ISLAND AERIAL TRANSPORT COMPANY, LIMITED."

Incorporated, January 16, 1919. - - - - - - Amount of capital stock, $250,000. Number of shares, 25,000.—Amount of each share, $10.

Corporate Members.—Louis Athanase David and Louis Philippe Crépeau, both of His Majesty's Counsel learned-in-the-law, Segfried Hinson Read Bush, and Benjamin Robinson, advocates, Norval Dickson, notary public, George Whittaker and William Gordon Finlayson, accountants, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Charlottetown, P.E.I.
Objects of the Company.—Vide p. 2342, *Canada Gazette*, 1918-19.

"CANADIAN SIMPLEX AUTO WHEEL COMPANY, LIMITED."

Incorporated, January 17, 1919 - - - Amount of capital stock, $325,000. Number of shares, 32,500.—Amount of each share, $10.

Corporate Members.—Ernest Albert Earle, financial agent, Everett Vernon Miller, manufacturer's agent, Oswold Lawrence Bancroft, barrister-at-law, Henry Gee, accountant, and Edward Ivan Barbour, insurance agent, all of Vancouver, B.C.
First or Provisional Directors.—The said corporate members.
Chief Place of Business.—Vancouver, B.C.
Objects of the Company.—*Vide* p. 2348, *Canada Gazette*, 1918-19.

"THE STAMPED METAL PRODUCTS COMPANY OF CANADA, LIMITED."

Incorporated January 17, 1919. - - - - - Amount of capital stock, $6,000,000. Number of shares, 60,000.—Amount of each share, $100.

Corporate Members.—William Alfred James Case, solicitor, George Evans Atwood, and James Broadbent Taylor, accountants, Cyril Middleton Smith and George Meredith Huycke, students-at-law, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2948, *Canada Gazette*, 1918-19.

"KHAKI LABEL BEVERAGES, LIMITED."

Incorporated January 18, 1919. - - - - - - - - Amount of capital stock, $150,000. Number of shares, 1,500.—Amount of each share, $100.

Corporate Members.—Martha Elizabeth Woodstock and Mary Louise Cook, spinsters; William John Dash, accountant; Wilfrid Heighington, student; and George Hess Shaver, barrister; all of Toronto, Ont.
First or Provisional Directors.—William John Dash, Wilfrid Heighington and George Hess Shaver.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2351, *Canada Gazette*, 1918-19.

"CANADIAN PRISONERS' WELFARE ASSOCIATION."

(Association.)

Incorporated January 18, 1919. - - - - - - - - - - - - Without share capital.

Corporate Members.—Robert Bickerdike and James Alexander Wright, gentlemen; Victor Evelyn Mitchell, King's Counsel; The Reverend James Paterson Smyth, Archdeacon Church of England; Charles Fyfe, builder; William Strachan Leslie, metal merchant; and Charles Augustine Mullen, consulting engineer, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2350, *Canada Gazette,* 1918-19.

"GOLDEN GLOW CHEMICAL PRODUCTS, LIMITED."

Incorporated January 20, 1919. - - - - - - - - - Amount of capital stock, $5,000. Number of shares, 50.—Amount of each share, $100.

Corporate Members.—Albert Holden, accountant; John Robert Verner, clerk, and Robert Bennett Hutcheson, notary public, of Westmount, Que.; and Henri Morin, notary public, and Gustavus Edward Blaine, manager, of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2346, *Canada Gazette,* 1918-19.

"N. E. McCLELLAND & COMPANY, LIMITED."

(As a private company.)

Incorporated January 20, 1918. - - - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—Frederick Henry Markey, Waldo Whittier Skinner, and George Gordon Hyde, all of His Majesty's Counsel, learned-in-the-law; John Gerard Ahern, advocate; and Ronald Cameron Grant, accountant; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2418, *Canada Gazette,* 1918-19.

"THE NATIONAL CITY COMPANY, LIMITED."

Incorporated January 20, 1919. - - - - - - - - - Amount of capital stock, $25,000. Number of shares, 250.—Amount of each share, $100.

Corporate Members.—Gordon Walters MacDougall and Lawrence Macfarlane, both of His Majesty's Counsel, learned-in-the-law; Linton Hossie Ballantyne and James Arthur Mathewson, advocates; and James Geary Cartwright, office manager, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2348, *Canada Gazette,* 1918-19.

"BISHOP NAVIGATION COMPANY, LIMITED."

(As a private company.)

Incorporated January 20, 1919. - - - - - - - - Amount of capital stock, $1,500,000. Number of shares, 15,000.—Amount of each share, $100.

Corporate Members.—Frederick Henry Markey, and George Gordon Hyde, both of His Majesty's Counsel, learned-in-the-law; John Gerard Ahern, advocate; Ronald Cameron Grant, accountant; and Elizabeth Russell McKenzie, secretary; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2350, *Canada Gazette,* 1918-19.

"TRANSATLANTIC STEAMSHIP COMPANY, LIMITED."

(As a private company.)

Incorporated January 21, 1919. - - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Charles Arthur Sara, manager; Frederick Henry Markey and George Gordon Hyde, both of His Majesty's Counsel, learned-in-the-law; Ronald Cameron Grant, accountant; and Elizabeth Russell McKenzie, secretary; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2349, *Canada Gazette,* 1918-19.

"THE STERLING CLOTHING CO., LIMITED."

Incorporated January 21, 1919. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Alexander Falconer and Michael Arthur Phelan, of Westmount, Que, both of His Majesty's Counsel, learned-in-the-law; Charles Gouverneur Ogden, King's Counsel; John Lesly Reay, accountant; and Joseph Alphonse L'Heureux, book-keeper, of Montreal, Que.
First or Provisional Directors.—Alexander Falconer, Michael Arthur Phelan and Charles Gouverneur Ogden.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2352, *Canada Gazette,* 1918-19.

"CANADIAN ENGINEERING STANDARDS ASSOCIATION."

(Association.)

Incorporated January 21, 1919. - - - - - - - - - - - - - Without share capital.

Corporate Members.—Sir John Kennedy, Knight Bachelor and consulting engineer; Robert Fulford Ruttan, doctor of medicine and professor of Chemistry; John Bonsall Porter, doctor of science and professor of mining engineering; Richard John Durley, Member of the Most Excellent Order of the British Empire and engineer, and Henry Hague Vaughan, engineer, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2415, *Canada Gazette,* 1918-19.

"THE VALLEY CAMP COAL COMPANY OF CANADA, LIMITED."

Incorporated January 22, 1919. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Robert Abercrombie Pringle, John William Pringle Ritchie and Louis Coté, barristers-at-law; and Margaret Mulligan and Mary Ida Keays, stenographers, all of Ottawa, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Hamilton, Ont.

Objects of the Company.—*Vide* p. 2417, *Canada Gazette,* 1918-19.

"ROBERTSON-OLSEN, LIMITED."

Incorporated January 22, 1919. - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—David Robertson, metal worker; Christopher Oswaldus Olsen, die maker; George David Kelley, Allan Joseph Fraser and Leo Andrew Kelley, barristers-at-law, all of Ottawa, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Ottawa, Ont.

Objects of the Company.—*Vide* p. 2417, *Canada Gazette* 1918-19.

"L. F. HOGAN, LIMITED."

Incorporated January 24, 1919. - - - - - - - Amount of capital stock, $30,000. Number of shares, 600.—Amount of each share, $50.

Corporate Members.—Joseph Alexander Primeau, barrister, Adam Christopher Fetterly, insurance manager, James Gardner, yeoman, Gordon John Parisian, undertaker, and Aileen Hogan, married woman, all of Cornwall, Ont.

First or Provisional Directors.—Adam Christopher Fetterly, James Gardener, and Aileen Hogan.

Chief place of Business.—Cornwall, Ont.

Objects of the Company.—*Vide* p. 2413, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued January 24, 1919, to

"THE D'AUTEUIL LUMBER COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $50,000 to the sum of $200,000, being an addition of 1,500 shares of $100, to the present capital stock. *Vide* p. 2413, *Canada Gazette,* 1918-19.

"MONTREAL SUPPLY COMPANY, LIMITED."

Incorporated January 24, 1919. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate members.—Joseph Antoine St. Germain, merchant and trader; Louis Charette, clerk; Arthur Charles Pouliot, commercial traveller; Horace Joseph Gagné, advocate; and Joseph Héliodore Gagné, merchant, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2418, *Canada Gazette,* 1918-19.

SESSIONAL PAPER No. 29

"THE OTTAWA SALVAGE COMPANY, LIMITED."

Incorporated January 24, 1919 - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Albert George Midford, civil engineer; Frederick William Waugh, anthropologist; Arthur Crowson, teacher; William Jones, machinist; and Victor Belanger, patent solicitor, all of Ottawa, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 2411, *Canada Gazette*, 1918-19.

"ASBESTOS COVERINGS AND LUBRICANTS, LIMITED."

Incorporated January 24, 1919. - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Honourable Clive Pringle, senator; Norman Gregor Guthrie, barrister; Ruby Blake and Joseph Arthur Lacelle, clerks; and John Gregory Brandstetter, secretary, all of Ottawa, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2419, *Canada Gazette*, 1918-19.

"STANDARD SALES, LIMITED."

Incorporated January 24, 1919 - - - - - - - Amount of capital stock, $30,000. Number of shares, 1,200.—Amount of each share, $25.

Corporate Members.—Adam Stuart Matheson, barrister; Bud Simmermon, farmer; Roger Lesley North, agent; Leo Griffin Dafoe, and Clarence Victor Doherty, students-at-law, all of Edmonton, Alta.
First or Provisional Directors.—Adam Stuart Matheson, Bud Simmermon, and Roger Lesley North.
Chief place of Business.—Winnipeg, Man.
Objects of the Company.—*Vide* p. 2416, *Canada Gazette*, 1918-19.

"LAGAR INVESTMENT, LIMITED."

Incorporated January 24, 1919 - - - - - - - Amount of capital stock, $49,000. Number of shares, 490.—Amount of each share, $100.

Corporate Members.—Joseph Donat Lapointe, manufacturer; Evelyn Mitchel, spinster; and Joseph Philippe Lanctôt, advocate, all three of Montreal, Que., and Charles Arthur Gareau, manufacturer; and Antoine Hamelin, student, both of Outremont, Que.
First or Provisional Directors.—Joseph Donat Lapointe, Charles Arthur Gareau, and Evelyn Mitchel.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2450, *Canada Gazette*, 1918-19.

"EDWARD THORNE & CO., LIMITED."
(As a Private Company)

Incorporated January 24, 1919. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Louis Fitch and Ben Bernstein, advocates; Abraham Saul Cohen, book-keeper; Joseph Philip Beaupré, bailiff; and Lillian Freedman, stenographer, all of Montreal, Que.
First or Provisional Directors.—Louis Fitch, Ben Bernstein, and Abraham Saul Cohen.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2415, *Canada Gazette,* 1918-19.

"CENTRAL HIDE & SKIN, LIMITED."
(As a Private Company)

Incorporated January 27, 1919. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate members.—François Philippe Brais, Henry Robert Mulvena and Edson Grenfell Place, advocates; Laura May Smith and Ella Mary Jackson, stenographers, all of Montreal, Que.
First or Provisional Directors.—François Phillippe Brais, Henry Robert Mulvena, and Edson Grenfell Place.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2485, *Canada Gazette,* 1918-19.

"M. F. FARRELL, LIMITED."

Incorporated January 27, 1919. - - - - - - - Amount of capital stock, $150,000. Number of shares, 1,500.—Amount of each share, $100.

Corporate Members.—Samuel Gerald Tritt, and Saul Tritt, advocates; Nicholas Swan and Herbert Webb, accountants; and Edna Urquhart, secretary, all of Montreal, Que.
First or Provisional Directors.—Samuel Gerald Tritt, Saul Tritt and Nicholas Swan.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2485, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued January 28, 1919, to

"LAMSON & HUBBARD CANADIAN COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $325,000 to the sum of $660,000, being an addition of 3,000 preferred shares of $100 each and 7,000 common shares without par value to the present capital stock.
Vide p. 2478, *Canada Gazette,* 1918-19.

"MARINE PRODUCTS, LIMITED."

Incorporated January 28, 1919. - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Edward Warner Wright; barrister-at-law; John Antliff Kent, accountant; John Edgerton Lovering, student-at-law; and Eva Marie Gardiner, and Ina Phippen Elliott, stenographers, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2480, *Canada Gazette,* 1918-19.

SESSIONAL PAPER No. 29

"THE DAVIS MANUFACTURING COMPANY, LIMITED."

Incorporated January 28, 1919. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Julius Frank Davis, and Jacob Harry Davis, manufacturers; Edward Mahony, manufacturer's agent; Sarah Davis, married woman; and Selma Davis, book-keeper, all of Toronto, Ont.

First or Provisional Directors.—Julius Frank Davis, Jacob Harry Davis and Edward Mahony.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 2676, *Canada Gazette*, 1918-19.

"THE MITCHELL VACUUM CLEANER COMPANY, LIMITED."

Incorporated January 29, 1919. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Walter Robert Lorimer Shanks, advocate; Francis George Bush, book-keeper, George Robert Drennan, stenographer; and Herbert William Jackson, and Michael Joseph O'Brien, clerks, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2480, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued January 29, 1919, to

"CANADIAN INCINERATOR COMPANY, LIMITED,"

Changing the corporate name of the said company to that of

"CANADIAN INCINERATOR AND FURNACE COMPANY, LIMITED."

Vide p. 2478, *Canada Gazette*, 1918-19.

"JOHN MATHER & COMPANY, LIMITED."

Incorporated January 29, 1919 - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—John Joseph Meagher and James Edward Coulin, both of His Majesty's Counsel learned-in-the-law; Ruth Reid, stenographer; Christina Imrie and Hugh Wylie, book-keppers, all of Montreal, Que.

First or Provisional Directors.—John Joseph Meagher, James Edward Coulin and Ruth Reid.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2479, *Canada Gazette*, 1918-19.

"THE SARNIA PAPER BOX COMPANY, LIMITED."

Incorporated January 30, 1919 - - - - - - Amount of capital stock, $50,000. Number of shares, 1,000.—Amount of each share, $50.

Corporate Members.—Frederick Forsyth Pardee and Norman St. Clair Gurd, barristers-at-law; Clare Judge, stenographer; Frederick Reginald Reeves, and William James Barber, accountants, all of Sarnia, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Sarnia, Ont.

Objects of the Company.—*Vide* p. 2485, *Canada Gazette*, 1918-19.

"SHINN MANUFACTURING COMPANY OF CANADA, LIMITED."

Incorporated January 30, 1919 - - - - - - - Amount of capital stock, $50,000. Number of shares, 5,000.—Amount of each share, $10.

Corporate Members.—Arthur Lorne Reid, barrister-at-law; William Walter Perry, secretary, Charles Herbert Croft Leggott, Archibald MacLean Borthwick and Edna Fitzsimons, accountants, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Guelph, Ont.
Objects of the Company.—*Vide* p. 2540, *Canada Gazette*, 1918-19.

"PERFECTION FLAX PULLING MACHINES, LIMITED."

Incorporated, January 30, 1919. - - - - - - - Amount of capital stock, $500,000. Number of shares, 50,000.—Amount of each share, $10.

Corporate Members.—Henry Jasper Martin, barrister-at-law, Thomas Neville Poole, law clerk, Hector Strange Johnston, manager, Mabel May Johnston and Eileen Lynn, stenographers, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2484. *Canada Gazette*, 1918-19.

"SAMARITANS OF CANADA."

(Association.)

Incorporated, January 30, 1919. - - - - - - - - - - - Without share Capital.

Corporate Members.—Blanche Irbe Bremner, author and playwright, Jane Griffith Rose, president, Victorian Order of Nurses, Sanford Johnston Crowe, contractor, John Buchan McGugan, retired farmer, and George Telford, dentist, all of Vancouver, B.C.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Vancouver, B.C.
Objects of the Company.—*Vide* p. 2479, *Canada Gazette*, 1918-19.

"THE GERRARD COMPANY, LIMITED."

Incorporated January 30, 1919. - - - - - - - - Amount of capital stock, $400,000. Number of shares, 4,000.—Amount of each share, $100.

Corporate Members.—Arthur Lorne Reid, barrister-at-law; William Walter Perry, secretary; and Charles Herbert Croft Leggott, Archibald MacLean Borthwick and Edna Fitzsimons, accountants, all of Toronto, Ont.
First or Provisional Directors.—Arthur Lorne Reid, William Walter Perry and Charles Herbert Croft Leggott.
Chief place of Business.—Hamilton, Ont.
Objects of the Company.—*Vide* p. 2479, *Canada Gazette*, 1918-19.

"OFFER, DALZIEL & CO., LIMITED."

(As a private company.)

Incorporated January 30, 1919. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Joseph Leonard Apedaile and Frank Percy Turville, chartered accountants; George Gordon Lewis, gentleman; Mervyn Offer, engineer; Malcolm Campbell Oswald, stock broker; Herbert Robert Risebrow, and John Struthers, accountants; Peers Davidson, King's Counsel; and Darley Burley-Smith, clerk, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2489, *Canada Gazette*, 1918-19.

"INGERSOLL FILE COMPANY, LIMITED."

Incorporated January 31, 1919. - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—James Leith Ross, Arthur Wellesley Holmested, and Albert Roy Kinnear, barristers-at-law; Edith Mary Carruthers, and Aileene Ritchie, stenographers, all of Toronto, Ont.

First or Provisional Directors.—James Leith Ross, Arthur Wellesly Holmested and Albert Roy Kinnear.

Chief place of Business.—Ingersoll, Ont.

Objects of the Company.—*Vide* p. 2188, *Canada Gazette*, 1918-19.

"NATHAN'S, LIMITED."

Incorporated January 31, 1919. - - - - - - - - Amount of capital stock, $30,000. Number of shares, 300.—Amount of each share, $100.

Corporate Members.—Abraham Saul Cohen, accountant; Ben Bernstein, advocate; Henry Emo, bookkeeper; Lillian Freedman, stenographer; and Joseph Philip Beaupré, bailiff, all of Montreal, Que.

First or Provisional Directors.—Abraham Saul Cohen, Ben Bernstein and Henry Emo.

Chief place of Business.—Pembroke, Ont.

Objects of the Company.—*Vide* p. 2491, *Canada Gazette*, 1918-19.

"BASTIAN BROTHERS, LIMITED."

Incorporated January 31, 1919. - - - - - - - - Amount of capital stock, $50,000; Number of shares, 500.—Amount of each share, $100.

Corporate Members.—George Thomas Bickle, commercial traveller; Thomas Wibby, and Edward Watkins Bickle, business managers; John Alexander Macintosh, barristers-at-law and Electa Irene Coultes, stenographer, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 2490, *Canada Gazette*, 1918-19.

"BECK BROS. & TURNER, LIMITED."

Incorporated January 31, 1919 - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Charles Macpherson Holt and Louis Gosselin, both of His Majesty's Counsel learned-in-the-law, Adolphe Chouinard, advocate, Sarah Epstein, book-keeper, and Gabrielle Olivier, stenographer, all of Montreal, Que.
First or Provisional Directors.—Louis Gosselin, Adolph Chouinard and Sarah Epstein.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2490, *Canada Gazette*, 1918-19.

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"JOSEPH PAPIN, LIMITEE."

Incorporated February 3, 1919 - - - - - - Amount of capital stock, $75,000. Number of shares, 750.—Amount of each share, $100.

Corporate Members.—Joseph Papin, shoe merchant, Joseph Papin, son, manager, Louis Papin and Alexandre Papin, foremen, and Albert Papin, machine operator, all of Contrecoeur, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Contrecoeur, Que.
Objects of the Company.—*Vide*, p. 2510, *Canada Gazette*, 1918-19.

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Supplementary Letters Patent, issued February 4, 1919, to

"GRIFFITH-McNAUGHTON, LIMITED."

(1) Increasing the capital stock of the said company from the sum of $40,000 to the sum of $300,000, being an addition of 2,600 shares of $100 each to the present capital stock, and (2) changing the corporate name of the said company to that of Kenwood Mills, Limited.
Vide p. 2478, *Canada Gazette*, 1918-19.

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"THE FIRELESS COOKER COMPANY OF CANADA, LIMITED."

Incorporated, February 4, 1919. - - - - - - Amount of capital stock, $100,000. Number of shares, 2,000.—Amount of each share, $50

Corporate Members.—Frank Ernest Ault, real estate agent, Arthur Ellis, barrister-at-law, and Alexander Roy Macdonald, manufacturer, all three of Ottawa, Ont., and Arthur Ouelette, foreman, and Elda LaRiviere, stenographer, both of Hull, Que.
First or Provisional Directors.—Frank Ernest Ault, Arthur Ellis and Alexander Roy Macdonald.
Chief place of Business.—Hull, Que.
Objects of the Company.—*Vide* p. 2534, *Canada Gazette*, 1918-19.

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Supplementary Letters patent, issued February 4, 1919 to

"COMPAGNIE DE CHAUSSURES DE FRASERVILLE, LIMITEE."

Decreasing the Capital stock of the said company from the sum of $100,000 to the sum of $50,000, such decreased capital stock to consist of 1,000 shares of $50 each.
Vide page 2600, *Canada Gazette*, 1918-19.

"INTERNATIONAL BUTTON COMPANY, LIMITED."

Incorporated February 5, 1919 - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—William Charles Thompson, manufacturer, Nora Charlotte Bellew, stenographer, Mary Lawlor, spinster, Ida McDonald, married woman (wife separate as to property of Henry Cosgrove Bellew and duly authorized for the purpose), Benedict Cosgrove Bellew, commercial traveller, and Fred Hunter, manufacturer's agent, all of Montreal, Que.

First or Provisional Directors.—William Charles Thompson, Nora Charlotte Bellew, and Benedict Cosgrove Bellew.

Chief place of Business.—Montreal, Que.

Object of the Company.—*Vide* page 2535, *Canada Gazette,* 1918-19.

"SAGUENAY SECURITIES COMPANY, LIMITED."

Incorporated February 5, 1919 - - - - - - - Amount of capital stock, $10,000. Number of shares, 100.—Amount of each share, $100.

Corporate Members.—Errol Malcolm McDougall, King's Counsel, Leslie Gordon Bell, and Sadie Conrad Demers, advocates, John Buchanan Henderson, clerk, and Beatrice Isolde Brandt, stenographer, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* page 2487, *Canada Gazette,* 1918-19.

"R. PERCY SIMS, LIMITED."

Incorporated February 5, 1919. - - - - - - - Amount of capital stock, $20,000. Number of shares, 2,000.—Amount of each share, $10.

Corporate Members.—James Alexander Hutcheson, barrister-at-law, Aida Maude Elizabeth Massey, widow, Edith Gertrude Baker and Rheta McKay, stenographers, and Randolph Percy Sims, consulting engineer, all of Brockville, Ont.

First or Provisional Directors.—James Alexander Hutcheson, Aida Maude Elizabeth Massey, and Randolph Percy Simms.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* page 2538, *Canada Gazette,* 1918-19.

"CANADIAN KRAFT, LIMITED."

Incorporated February 5, 1919. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Frank Breadon Common, advocate, Francis George Bush, bookkeeper, George Robert Drennan, stenographer, Herbert William Jackson and Michael Joseph O'Brien, clerks, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* page 2534, *Canada Gazette,* 1918-19.

Supplementary Letters patent, issued February 5, 1919 to

"THE OLIVER CHILLED PLOW WORKS OF CANADA, LIMITED."

Changing the corporate name of the said company to that of

"INTERNATIONAL PLOW WORKS OF CANADA, LIMITED."

Vide page 2478, *Canada Gazette,* 1918-19.

"CANADIAN FISHING AND TRANSPORT COMPANY, LIMITED."

Incorporated February 5, 1919. - - - - - - Amount of capital stock, $1,500,000. Number of shares, 15,000.—Amount of each share, $100.

Corporate Members.—Arthur Lorne Reid, barrister-at-law, William Walter Perry, secretary, and Charles Herbert Croft Leggott, Archibald MacLean Borthwick and Edna Fitzsimons, accountants, all of Toronto, Ont.

First or Provisional Directors—Arthur Lorne Reid, William Walter Perry and Charles Herbert Croft Leggott.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 2533, *Canada Gazette*, 1918-19.

"MERRITT AND COMPANY, LIMITED."

Incorporated February 5, 1919. - - - - - - Amount of capital stock, $75,000. Number of shares, 750.—Amount of each share, $100.

Corporate Members.—Herbert Leslie Merritt, and Clarence Henry Merritt, traders, George Best Merritt, lumberman, Elizabeth Jane Merritt, married woman, and Grace Vivian Merritt, spinster, all of Chatham, Ont.

First or Provisional Directors.—Herbert Leslie Merritt, Clarence Henry Merritt and George Best Merritt.

Chief place of Business.—Chatham, Ont.

Objects of the Company.—*Vide* p. 2541, *Canada Gazette*, 1918-19.

"HENRI PELADEAU, LIMITED."

Incorporated February 6, 1919. - - - - - - Amount of capital stock, $99,000. Number of shares, 990.—Amount of each share, $100.

Corporate Members.—Henri Peladeau and Alfred Gingras, lumber merchants, Louis de Gonzague Garand, accountant, Helene Lawlor, stenographer, and Zénophile Peladeau, clerk, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2541, *Canada Gazette*, 1918-19.

"THORNTON DAVIDSON & COMPANY, LIMITED."

(As a private company.)

Incorporated February 6, 1919. - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Arnold Wainwright, King's Counsel, Aubrey Huntington Elder, and Felix Winfield Hackett, advocates, Bertha Hodgson, secretary, and Darley Burley-Smith, clerk, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2875, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 6, 1919, to

"ST. HYACINTHE SOFT SOLE SHOE COMPANY, LIMITED."

(1) Increasing the capital stock of the said company from the sum of $10,000 to the sum of $99,000, being an addition of 890 shares of $100 each to the present capital stock, and (2) changing the corporate name of the said company to that of

"A. A. COTE & SON, LIMITED."
"A. A. COTE & FILS, LIMITEE."

Vide p. 2532, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"P. J. DWYER MOLYBDENITE, LIMITED."

Incorporated February 6, 1919. - - - - - - - - Amount of capital stock, $350,000. Number of shares, 350,000.—Amount of each share, $1.

Corporate Members.—Lena Adams, book-keeper; Henry Cartwright Secord, broker; Kenneth Alexander McRae, engineer, Mabel Gray and Vera Marion Gray, teachers, all of Toronto, Ont.
First or Provisional Directors.—Lena Adams, Henry Cartwright Secord and Kenneth Alexander McRae.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2536, *Canada Gazette*, 1918-19.

"CONSOLIDATED SALES AGENCIES, LIMITED."

(As a private company.)

Incorporated February 8, 1919. - - - - - - - - Amount of capital stock, $30,000. Number of shares, 300.—Amount of each share, $100.

Corporate Members.—François Phillippe Brais, and Henry Robert Mulvena, advocates; and Laura May Smith, Ella Mary Jackson and Bessie Moore Rogers, stenographers, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2600, *Canada Gazette*, 1918-19.

"THE CHATS FALLS NAVIGATION COMPANY, LIMITED."

Incorporated February 10, 1919. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Weldon James Graham, druggist; Oliver Martin, dentist; Leonidas Guisolphe Roy and Charles Emery, civil servants, and William James Carson, merchant, all of Ottawa, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 2539, *Canada Gazette*, 1918-19.

"SHANNON FISHERIES, LIMITED."

Incorporated February 10, 1919. - - - - - - - - Amount of capital stock, $45,000. Number of shares, 450.—Amount of each share, $100.

Corporate Members.—Robert Shennan, manufacturer; George Vipond Cousins, and Egbert William Westover, advocates; and Rosalind Stuart, stenographer, all of Montreal, Que; and Charles Mackay Cotton, of Westmount, Que. advocate.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2538, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 10, 1919, to

"DOMINION SHIPBUILDING COMPANY, LIMITED."

Converting the said company into a public company.
Vide p. 2532, *Canada Gazette*, 1918-19.

"LOEW'S LONDON THEATRES, LIMITED."

Incorporated February 10, 1919. - - - - - Amount of capital stock, $1,000,000. Number of shares, 100,000.—Amount of each share, $10.

Corporate Members.—Reginald Holland Parmenter and Arthur John Thomson, solicitors, and Samuel Davidson Fowler, solicitor's clerk; Violet Moffat, accountant, and Anna Latimer, office clerk, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2863, *Canada Gazette*, 1918-19.

"ATLAS BOND & SECURITY CORPORATION, LIMITED."

Incorporated February 10, 1919. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Frederick Abraham, of Westmount, Que., gentleman; Gordon Herbert Wilson and John Swinwood Rigby, brokers; Frank Nicolls, salesman, and James Pollard Rice, manager, all four of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2542, *Canada Gazette*, 1918-19.

"WAR PUBLICATIONS, LIMITED."

Incorporated February 11, 1919. - - - - - - Amount of capital stock, $50,000 Number of shares, 1,000.—Amount of each share, $50.

Corporate Members.—Noah Joseph Gareau and Wilfrid Empey Densmore Lewis, accountants; Joseph Henry DeWolfe, publisher; Howard Bruce MacConnell, inventor and author, and Edward Russell Jackson, jeweller, all of Ottawa, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 2541, *Canada Gazette*, 1918-19.

"NATIONAL ELECTRO-PRODUCTS, LIMITED."

Incorporated February 11, 1919. - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—James Leith Ross, Arthur Wellesley Holmested, Albert Roy Kinnear, barristers at law, and Edith Mary Carruthers and Aileene Ritchie, stenographers, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2606, *Canada Gazette*, 1918-19.

"MERCHANTS' SERVICE COMPANY OF CANADA, LIMITED."

Incorporated February 11, 1919. - - - - Amount of capital stock, $40,000. Number of shares, 400.—Amount of each share, $100.

Corporate Members.—Herbert Clute Gibson, and Frank Joseph Patrick Crean, managers, Samuel Rupert Broadfoot, barrister, Kirk Patrick Ludington, salesman, and Charles Lount Bray, solicitor, all of Ottawa, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 2604, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 11, 1919, to

"VULCAN KNITTING MILLS OF CANADA, LIMITED."

Increasing the capital stock of the said company from the sum of $50,000 to the sum of $150,000, being an addition of 1,000 shares of $100 each to the present capital stock, and changing the corporate name of the said company to that of

"NATIONAL GLOVES, LIMITED."

Vide p. 2531, *Canada Gazette*, 1918-19.

"H. H. ROBERTSON COMPANY, LIMITED."

Incorporated February 11, 1919. - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Harold Hansard Robertson, manufacturer, of Sewickley, Penns., U.S.A., and Charles MacKenzie, gentleman, Robert Irwin Towers, barrister-at-law, Caroline Mary Cowan, stenographer, and Mary Etta Wismer, bank clerk, all of Sarnia, Ont.

First or Provisional Directors.—Charles MacKenzie, Robert Irwin Towers and Caroline Mary Cowan.

Chief place of Business.—Sarnia, Ont.

Objects of the Company.—*Vide* p. 2876, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 11, 1919, to

"INTERNATIONAL DISTRIBUTING COMPANY OF CANADA, LIMITED."

changing the corporate name of the said company to that of

"EVER-READY SAFETY RAZOR COMPANY, LIMITED."

Vide p. 2599, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 11, 1919 to

"THE GEORGE FRID COMPANY, LIMITED,"

Changing the corporate name of the said company to that of

"FRID CONSTRUCTION COMPANY, LIMITED."

Vide p. 2599, *Canada Gazette*, 1918-19.

"WM. STOCK AND SONS, LIMITED."

Incorporated, February 12, 1919. - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—George Newcombe Gordon, and Joseph Aloysius O'Brien, barristers-at-law, and Maud Leahy, Jessie Stevens and Mary Easson, stenographers, all of Peterborough, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Peterborough, Ont.

Objects of the Company.—*Vide* p. 2605, *Canada Gazette*, 1918-19.

"EDWARD A. ROBINSON COMPANY, LIMITED."

Incorporated, February 12, 1919. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Errol Languedoc, King's Counsel, and Colville Sinclair, Ralph Erskin Allan, and Jean Pierre Charbonneau, advocates, and William Taylor, manager, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2602, *Canada Gazette*, 1918-19.

"CITIZEN'S RESEARCH INSTITUTE OF CANADA."
(Association.)

Incorporated, February 12, 1919. - - - - - - - - - - Without share capital.

Corporate Members.—John Firstbrook and Frederic Barry Hayes, manufacturers, Mark Bredin, baker, Frank Wise, publisher, James Patrick Hynes, architect, and John Ingham Sutcliffe, chartered accountant, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 2601, *Canada Gazette*, 1918-19.

"MONTREAL FORGE AND SHACKLE COMPANY, LIMITED."
(As a private company.)

Incorporated February 12, 1919. - - - - - - Amount of capital stock, $20,000. Number of shares, 200.—Amount of each share, $100.

Corporate Members.—Arthur William Patrick Buchanan, King's Counsel, Joseph Christopher Barry Walsh, and John Muleair, notaries public; and Elizabeth Florence Hallam, stenographer; all of Montreal, Que.; and Frank John Knox, of Westmount, Que., insurance broker.
First or Provisional Directors.—The said corporate members.
Chief Place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2600, *Canada Gazette*, 1918-19.

"BRANTFORD ROOFING COMPANY, LIMITED."

Incorporated February 13, 1919. - - - - - - Amount of capital stock, $250,000. Number of shares, 2,500.—Amount of each share, $100.

Corporate Members.—William David Shultz, James Adams and Charles Morton Thompson, manufacturers; and Frederick William Ryerson, wholesale merchant, and William Thomas Henderson, one of His Majesty's Counsel; all of Brantford, Ont.
First Provisional Directors.—The said corporate members.
Chief place of Business.—Brantford, Ont.
Objects of the Company.—*Vide* p. 2608, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 14, 1919, to

"ONTARIO SPECIALTIES, LIMITED."

Increasing the capital stock of the said company from the sum of $100,000 to the sum of $150,000 being an addition of 500 shares of $100 to the present capital stock. *Vide* p. 2599, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"THE F. C. PAUL CO., LIMITED."

Incorporated February 14, 1919, - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Louis Philippe Crepeau, King's Counsel; Segfried Hinson Read Bush, and Benjamin Robinson, advocates; George Whittaker, accountant; and Alec Phelps Grigg, student-at-law, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief Place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2608, *Canada Gazette*, 1918-19.

"LANGLOIS-SMITH FUR COMPANY, LIMITED."

Incorporated February 14, 1919. - - - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Hugh MacKay, King's Counsel, John MacNaughton, advocate, and Robert Houston, James Geary Cartwright, and James Burnett Taylor, managers, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2674, *Canada Gazette*, 1918-19.

"THE MONTREAL BRUSH MFG. CO., LIMITED."

Incorporated February 15, 1919. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Walter Seely Johnson, barrister, Alexander Rives Hall, King's Counsel, Rhoda Mary Husband, Josie Edwards and Gertrude Susan O'Brien, secretaries, all of Montreal, Que.

First or Provisional Directors.—Walter Seely Johnson, Alexander Rives Hall and Rhoda Mary Husband.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2673, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 19, 1919, to

"THE CANADA ATLANTIC GRAIN COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $100,000 to the sum of $300,000 being an addition of 2,000 shares of $100 each to the present capital stock.

Vide p. 2672, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 19, 1919, to

"LA COMPAGNIE DE COMMERCE UNIVERSEL DES PRODUITS CANADIENS, LIMITEE."

"THE UNIVERSAL TRADE OF CANADIAN PRODUCTS, LIMITED."

Changing the corporate name of the said company to that of

LES PRODUITS CANADIENS, LIMITEE."

"CANADIAN PRODUCTS, LIMITED.

Vide p. 2672, *Canada Gazette*, 1918-19.

"THE SHAWINIGAN ENGINEERING COMPANY, LIMITED."

Incorporated February 20, 1919. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Gordon Walters MacDougall, King's Counsel, William Bridges Scott, and Linton Hossie Ballantyne, advocates, James Geary Cartwright, accountant, and Elsie Campbell Winter, stenographer, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2673, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 20, 1919, to

"THE CANADA CASING COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $200,000 to the sum of $500,000, being an addition of 3,000 shares of $100 to the present capital stock.

Vide p. 2672, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 20, 1919, to

"A. C. LESLIE & COMPANY (LIMITED)."

Increasing the capital stock of the said company from the sum of $250,000 to the sum of $500,000, being an addition of 2,500 shares of $100 each to the present capital stock.

Vide p. 2672, *Canada Gazette*, 1918-19.

"THE SHAW TOBACCO COMPANY, LIMITED."

Incorporated February 24, 1919 - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—George Vipond Cousins, Charles Mackay Cotton and Aubrey Huntington Elder, advocates, and Rosalind Stuart and Isabella Stewart Macfarlane, stenographers, all of Montreal, Que.
First or Provisional Directors.—George Vipond Cousins, Charles Mackay Cotton and Aubrey Huntington Elder.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2729, *Canada Gazette*, 1918-19.

"CONSOLIDATED WAFER COMPANY, LIMITED."

Incorporated February 24, 1919. - - - - - - - Amount of capital stock, $50,000. Number of shares, 5,000.—Amount of each share, $10.

Corporate Members.—Samuel Madfes, Barnette Duberstein and Morris Duberstein, manufacturers, of Brooklyn, N.Y., U.S.A., and Max Goldberg, Abraham Cohen and Jacob Jay Dubey, manufacturers, of Chicago, Ill., U.S.A.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2675, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 24, 1919, to

"REYNOLDS TIMBER SHIPPING AND INSURANCE AGENCY, LIMITED."

Increasing the capital stock of the said company from the sum of $40,000 to the sum of $150,000, being an addition of 1,100 shares of $100 each to the present capital stock.

Vide p. 2728, *Canada Gazette*, 1918-19.

"CLARK MILLING COMPANY, LIMITED."

Incorporated February 25, 1919. - - - - - - Amount of capital stock, $1,000,000. Number of shares, 100,000.—Amount of each share, $10.

Corporate Members.—William James Moran, Robert Dunbar Guy, and Charles Whitfield Chappell, barristers-at-law; Paul Guyot Duval, student-at-law, and Louise Maud Stuart, stenographer, all of Winnipeg, Man.

First or Provisional Directors.—William James Moran, Robert Dunbar Guy, and Charles Whitfield Chappell.

Chief place of Business.—Winnipeg, Man.

Objects of the Company.—*Vide* p. 2736, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 24, 1919, to

"ASSOCIATED SECURITIES COMPANY, LIMITED."

Changing the corporate name of the said company to that of

"BRITISH COLUMBIA CEMENT COMPANY, LIMITED."

Extending the powers of the said company.

Vide p. 2728, *Canada Gazette*, 1918-19.

"THE MACARTNEY MILKING MACHINE COMPANY, LIMITED."

Incorporated February 25, 1919. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Thomas Brownlee and Daniel Herron, agents; John Robinson Osborne, and Samuel Rupert Broadfoot, barristers-at-law; Charles William Hall, salesman; Alexander Delahaye and Gideon Delahaye, manufacturers; and Laura Catherine Burpee, spinster, all of Ottawa, Ont.; and Thomas Delahaye, of Brockville, Ont., manufacturer.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Ottawa, Ont.

Objects of the Company.—*Vide* p. 2733, *Canada Gazette*, 1918-19.

"SENNEVILLE LAND CO., LIMITED."

Incorporated February 25, 1919. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Russell Thomas Stackhouse, King's Counsel; Ralph Erskine Allan, Jean Pierre Charbonneau, and John McNaughton, advocates; and William Taylor, accountant, all of Montreal, Que.

First or Provisional Directors.—Russell Thomas Stackhouse, Ralph Erskine Allan and William Taylor.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2731, *Canada Gazette*, 1918-19.

"KINGDON MINING, SMELTING & MFG. CO., LIMITED."

Incorporated, February 25, 1919. - - - - - - Amount of capital stock, $750,000. Number of shares, 7,500.—Amount of each share, $100.

Corporate Members.—Louis Philippe Crepeau, King's Counsel, Segfried Hinson Read Bush, and Benjamin Robinson, advocates, George Whittaker, accountant, and Alec Phelps Grigg, student-at-law, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2728, *Canada Gazette*, 1918-19.

"PREMIER POTATO COMPANY, LIMITED."

(As a private company.)

Incorporated, February 25, 1919. - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—François Phillippe Brais, and Henry Robert Mulvena, advocates, and Laura May Smith, Ella Mary Jackson and Bessie Moore Rogers, stenographers, all of Montreal, Que.
First or Provisional Directors.—François Phillippe Brais, Henry Robert Mulvena and Laura May Smith.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2730, *Canada Gazette*, 1918-19.

"NISBET AND AULD, LIMITED."

(As a private company.)

Incorporated, February 25, 1919. - - - - - - Amount of capital stock, $750,000. Number of shares, 7,500.—Amount of each share, $100.

Corporate Members.—Charles Forsyth Ritchie, barrister-at-law, Wilfrid Field and George Meredith Orr, students-at-law, Miriam Jackson and Elizabeth McQuarrie, stenographers, all of Toronto, Ont.
First or Provisional Directors.—Charles Forsyth Ritchie, Wilfrid Field and George Meredith Orr.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2730, *Canada Gazette*, 1918-19.

"UNITED FINANCIAL CORPORATION, LIMITED."

Incorporated February 26, 1919. - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Walter Robert Lorimer Shanks, advocate; Francis George Bush, book-keeper; George Robert Drennan, stenographer; Herbert William Jackson and Michael Joseph O'Brien, clerks, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2731, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"DOMINION EXPORTERS, LIMITED."

(Re-incorporation.)

Incorporated February 26, 1919. - - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Hugh MacKay, King's Counsel; John MacNaughton, advocate; Robert Dodd, broker; Robert Houston, James Geary Cartwright, and James Burnett Taylor, managers, all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2738, *Canada Gazette*, 1918-19.

"CANADIAN EXHIBITORS EXCHANGE, LIMITED."

Incorporated February 26, 1919. - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Wilfrid Field, George Meredith Orr, and Hilliard Brooke Bell, students-at-law; Elizabeth McQuarrie, Harriet Green, Miriam Jackson and Annie Redpath, stenographers; Leo Joseph Phelan and Charles Forsyth Ritchie, barristers, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2738, *Canada Gazette*, 1918-19.

"JOHN SWEET & COMPANY, LIMITED."

Incorporated February 26, 1919. - - - - - - - Amount of capital stock, $40,000. Number of shares, 400.—Amount of each share, $100.

Corporate Members.—Nathan Phillips, William Henry McGuire, George Francis Rooney, barristers; Florence Alice Sweet, Anna McCartney and Mira Edith Ingram, stenographers, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Hamilton, Ont.
Objects of the Company.—*Vide* p. 2732, *Canada Gazette*, 1918-19.

"J. E. HANGER, LIMITED."

(As a private company.)

Incorporated February 26, 1919. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Joseph Max Bullen, Norman Stuart Robertson, and Harold Learoyd Steele, barristers-at-law; Agnes Porter Traill, accountant; and Lena Duff, stenographer, all of Toronto, Ont.
First or Provisional Directors.—Joseph Max Bullen, Norman Stuart Robertson, and Harold Learoyd Steele.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2775, *Canada Gazette*, 1918-19.

Supplementary Leters Patent issued February 27, 1919, to

"LAMSON & HUBBARD CANADIAN COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $660,000 to the sum of $660,000, being an addition of 6,000 shares, without par value, to the present capital stock.

Vide p. 2673, *Canada Gazette*, 1918-19.

"THE HERALD PRESS, LIMITED."

(As a private company.)

Incorporated February 27, 1919. - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—John William Cook, and Alexander Huntly Duff, both of His Majesty's counsel learned-in-the-law; Margaret Teresa Darragh and Emily Oldroyd, secretaries; and Jean Lang Muir, accountant.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2856, *Canada Gazette*, 1918-19.

"THE JOST COMPANY, LIMITED."

Incorporated February 27, 1919. - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Percy Matheson Jost and Aristides Edwin Wever, merchants, both of Westmount, Que.; Joseph Armitage Ewing, and George Samuel McFadden, both of His Majesty's counsel learned-in-the-law; and John Travers Smith, clerk, all three of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2781, *Canada Gazette*, 1918-19.

"THE HERALD PUBLISHING COMPANY, LIMITED."

(As a private company.)

Incorporated February 27, 1919. - - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—John Wilson Cook, and Alexander Huntly Duff, both of His Majesty's counsel learned-in-the-law; Margaret Teresa Darragh and Emily Oldroyd, secretaries, and Jean Lang Muir, accountant; all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2856, *Canada Gazette*, 1918-19.

"PARAMOUNT PHONOGRAPH & RECORD COMPANY OF CANADA, LIMITED."

(As a private company.)

Incorporated February 27, 1919. - - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100

Corporate Members.—Maxwell Goldstein, advocate and King's counsel; John Albert Engel, advocate; James Burnett Taylor, accountant; Adolph Gardner, student-at-law, and Berthe Maysenhoelder, stenographer, all of Montreal, Que.

First or Provisional Directors.—Maxwell Goldstein, John Albert Engel, and James Burnett Taylor.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2737, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 28, 1919, to

"THE NOMININQUE PULP & LUMBER COMPANY, LIMITED"

Changing the corporate name of the said company to that of

"EUGENE PATENAUDE, LIMITEE."

Vide p. 2728, *Canada Gazette*, 1918-19.

"SUBURBAN WATER, LIMITED."

(Re-incorporation.)

Incorporated, February 28, 1919. - - - - - - Amount of capital stock, $600,000.

Number of shares, 6,000.—Amount of each share, $100.

Corporate Members.—Sir John Wallace Carson, financier; Samuel William Cohen, mining engineer; William Inkerman Gear, shipping broker; Milton Lewis Hersey, chemist; Lawrence Edgar Oborne, secretary, all of Montreal, Que.

First or Provisional Directors.—Sir John Wallace Carson, Samuel William Cohen and Milton Lewis Hersey.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2736, *Canada Gazette*, 1918-19.

"THE VICTORY LIGHTER COMPANY OF CANADA, LIMITED."

(As a private company.)

Incorporated, February 28, 1919. - - - - - - Amount of capital stock, $16,000.

Number of shares, 160.—Amount of each share, $100.

Corporate Members.—François Philippe Brais, advocate; Jules Bruneau, student; Thomas Barnard Gould and René Bourdon, accountants, and Bessie Moore Rogers, stenographers, all of Montreal, Que.

First or Provisional Directors.—François Philippe Brais, Jules Bruneau and Thomas Barnard Gould.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2781, *Canada Gazette*, 1918-19.

"LOEW'S OTTAWA THEATRES, LIMITED."

Incorporated, February 28, 1919. - - - - - - Amount of capital stock, $1,860,000.

Number of shares, 10,000 preference shares of $100 each and 34,100 common shares of $25 each.

Corporate Members.—Arnold Wainwright, King's counsel; Aubrey Huntington Elder and Felix Winfield Hackett, advocates; Bertha Hodgson, secretary; and Darley Burley-Smith, clerk, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2776, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued February 28, 1919, to

"THE VICTOR QUARRY COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $25,000 to the sum of $100,000, being an addition of 750 shares of $100 each to the present capital stock.

Vide p. 2855, *Canada Gazette*, 1918-19.

"BELL KING, LIMITED."

Incorporated February 28, 1919. - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Richard Tuson Heneker, Henry Noel Chauvin, and Harold Earle Walker, advocates, and Hugh Wylie, accountant, all of Montreal, Que.; and Christina Imrie, of Westmount, Que., clerk.

First or Provisional Directors.—The said corporate members.

Chief place of business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2778, *Canada Gazette*, 1918-19.

"JOS. COTE, LIMITEE."

Incorporated March 3, 1919. - - - - - Amount of capital stock, $250,000. Number of shares, 2,500.—Amount of each share, $100.

Corporate Members.—Jos. Coté, merchant; Lorenzo Déry, manager; Charles Edmond Taschereau and Joseph Philéas Cantin, notaries, and Elzire Rochette, stenographer, all of Quebec, Que.

First or Provisional Directors.—Joseph Coté, Charles Edmond Taschereau and Joseph Philéas Cantin.

Chief place of Business.—Quebec, Que.

Objects of the Company.—*Vide* p. 2815, *Canada Gazette*, 1918-19.

"CANADIAN FILE & TOOL WORKS, LIMITED."
(As a private company.)

Incorporated March 3, 1919. - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Frederick Thomas Enright, King's Counsel, of Westmount, Que.; Thomas Barnard Gould, book-keeper, of Lachine, Que.; Egbert William Westover, advocate, James Francis Walsh, cashier, and Renê Bourdon, accountant, all three of Montreal, Que.

First or Provisional Directors.—Frederick Thomas Enright, Thomas Barnard Gould, and James Francis Walsh.

Chief place of business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2782, *Canada Gazette*, 1918-19.

"CANADIAN BISCUIT & CONFECTIONERY EXPORT CO., LIMITED."

Incorporated, March 3, 1919. - - - - - - Amount of capital stock, $40,000. Number of shares, 400.—Amount of each share, $100.

Corporate Members.—William Robertson, Herbert Norton Cowan, Herbert Arthur Telfer, John Wetherill Palmer, and Charles Joseph Bodley, manufacturers, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 2953, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued March 3, 1919 to

"LA COMPAGNIE D'ORGUES CANADIENNES (LIMITEE).
"THE CANADIAN PIPE ORGAN COMPANY, LIMITED."

Increasing the capital stock of the said company from the sum of $50,000 to the sum of $99,000 being an addition of 490 shares of $100 each to the present capital stock.

Vide p. 2790, *Canada Gazette*, 1918-19.

"McGUIRE KIRKLAND GOLD MINES, LIMITED."

Incorporated, March 3, 1919. - - - - - - - Amount of capital stock, $350,000. Number of shares, 350,000.—Amount of each share, $1.

Corporate Members.—Lena Adams, bookkeeper, Mary Winnifred Hunt, stenographer, Kenneth Alexander McRae, engineer, Mabel Gray and Vera Marion Gray, teachers, and Edward Martin, inspector, all of Toronto, Ont.
First or Provisional Directors.—Lena Adams, Mary Winnifred Hunt and Kenneth Alexander McRae.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2857, *Canada Gazette*, 1918-19.

"THE NATIONAL SAFETY OIL BURNER COMPANY, LIMITED."

Incorporated, March 3, 1919. - - - - - - - Amount of capital stock, $40,000. Number of shares, 400.—Amount of each share, $100.

Corporate Members.—Morley Calvin Pritchard, solicitor; William Walter Scott, Andrew Baxter Law, John William Lee, and Robert Baillie Jeffrey, real estate agents, all of Toronto, Ont.
First or Provisional Directors.—Morley Calvin Pritchard, William Walter Scott and Andrew Baxter Law.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2869, *Canada Gazette*, 1918-19.

"BORDER CITIES COMPANY, LIMITED."

Incorporated March 4, 1919. - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—John Fletcher Gundy, Henry Wentworth Gundy, and Garnet Sumner Bell, real estate brokers, of Toronto, Ont.; William Eveleigh Gundy, barrister-at-law, and Percy Joseph England, real estate broker, of Windsor, Ont., and Harry James Finch, of Detroit, Mich., U.S.A., real estate broker.
First or Provisonal Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2779, *Canada Gazette*, 1918-19.

"EASTERN CANADA MOTOR TRUCK COMPANY, LIMITED."

Incorporated March 4, 1919. - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Percy Dixon Wilson, Gaston Fontaine, barristers-at-law; George Andrew Welch, accountant; May Margaret Regan, stenographer, and John Baptiste Gourgon, bookkeeper, all of Ottawa, Ont.
First or Provisonal Directors.—The said corporate members.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 2784, *Canada Gazette*, 1918-19.

"CANADIAN COLLAPSIBLE RIM COMPANY, LIMITED."

Incorporated March 4, 1919. - - - - - - - - Amount of capital stock, $500,000. Number of shares, 100,000.—Amount of each share, $5.

Corporate Members.—John Angus Campbell, manufacturer; Sydney Smith Anderson, railway manager, and Frederick Charles Kerby, barrister-at-law, all three of Windsor, Ont., and James Brown Gunn, of Winnipeg, Man., contractor; and Arthur Campbell Smith, lithographer; William Henry Duncan and Eldon Barnett Edmunds, capitalists, of Toledo, Ohio, U.S.A.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Windsor, Ont.

Objects of the Company.—*Vide* p. 2951, 1918-19.

"DOHERTY METAL PLATING COMPANY, LIMITED."

(As a Private Company.)

Incorporated March 4, 1919. - - - - - - - - Amount of capital stock, $10,000. 2,000 shares without nominal or par value.

Corporate Members.—John Doherty, manufacturer; William Logie, physician; Robert Irwin Towers, barrister-at-law; Ann Wismer, stenographer, of Sarnia, Ont., and Lincoln Avery, of Port Huron, Mich., U.S.A., attorney-at-law.

First or Provisional Directors.—William Logie, Ann Wismer and Lincoln Avery.

Chief place of Business.—Sarnia, Ont.

Objects of the Company.—*Vide* p. 2777, *Canada Gazette*, 1918-19.

"MONTREAL AND WESTERN GRAIN COMPANY, LIMITED."

Incorporated March 5, 1919. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Walter Robert Lorimer Shanks, advocate; Francis George Bush, book-keeper; George Robert Drennan and Alexander Gordon Yeoman, stenographers, and Herbert William Jackson, clerk, all of Montreal, Que.

First or Provisional Directors.—Walter Robert Lorimer Shanks, Francis George Bush and George Robert Drennan.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2789, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued March 6, 1919, to

"BRITISH DOMINIONS SECURITIES CORPORATION, LIMITED."

Changing the corporate name of the said company to that of

"UNITED PROPERTIES, LIMITED."

Vide p. 2790, *Canada Gazette*, 1918-19.

"NEPTUNE FISHERIES, LIMITED."

(As a private company.)

Incorporated March 7, 1919. - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Frederick Henry Markey, Waldo Whittier Skinner and George Gordon Hyde, all three of His Majesty's counsel learned-in-the-law; John Gerard Ahern, advocate, and Ronald Cameron Grant, accountant, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2860, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"THE GREAT ATLANTIC AND PACIFIC TEA COPMANY, LIMITED."

Incorporated March 7, 1919. - - - - - - - - Amount of capital stock, $100,000 Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—James Richardson Roaf and James Warburton, solicitors; Frederick George McBrien, student-at-law; D'Alton McCarthy Gilpin and Copland William Evans, brokers, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 2784, *Canada Gazette,* 1918-19.

"THE CRAMMOND MACHINERY COMPANY, LIMITED."

Incorporated March 7, 1919. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Walter Seely Johnson, advocate; Alexander Rives Hall, King's Counsel; Rhoda Mary Husband, Gertrude Susan O'Brien and Josie Edwards, secretaries, all of Montreal, Que.

First or Provisional Directors.—Walter Seely Johnson, Alexander Rives Hall and Rhoda Mary Husband.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2788, *Canada Gazette,* 1918-19.

"RENFREW ELECTRIC PRODUCTS, LIMITED."

Incorporated March 7, 1919. - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Stephen Henry Murphy, physician; John Alexander Jamieson and Thomas Andrew Low, manufacturers; William Thomas Guest, miller; Edward Harris Porte, manager, all of Renfrew, Ont.; and John Robinson Osborne, of Ottawa, Ont., solicitor.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Renfrew, Ont.

Objects of the Company.—*Vide* p. 2860, *Canada Gazette,* 1918-19.

"R. N. TAYLOR & CO., LIMITED."

Incorporated March 7, 1919. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 4,000.—Amount of each share, $25.

Corporate Members.—Richard Nutting Taylor, Trevelyan Hearty Taylor, and Russell Howard Taylor, opticians; Marion Sutherland, married woman, and Charles Power Cleghorn, insurance broker, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2786, *Canada Gazette,* 1918-19.

"CLARKE BROTHERS, LIMITED."

Incorporated March 8, 1919. - - - - - - - - Amount of capital stock, $1,500,000. Number of shares, 15,000.—Amount of each share, $100.

Corporate Members.—Alexander Fasken, George Herbert Sedgewick, Robert Spelman Robertson, John Wellington Pickup, James Aitchison, Norman Stuart Caudwell, and Robert Elmer Fennell, all of Toronto, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Bear River, N.S.

Objects of the Company.—*Vide* p. 2787, *Canada Gazette,* 1918-19.

Supplementary Letters Patent issued March 10, 1919,

"CHURCH & CHURCH, LIMITED."

Increasing the capital stock of the said company from the sum of $20,000 to the sum of $50,000, being an addition of 300 shares of $100 each to the present capital stock.

Vide p. 2790, *Canada Gazette*, 1918-19.

"THE WENDIGO POWER COMPANY, LIMITED."

Incorporated March 10, 1919. - - - - - - - - Amount of capital stock, $1,000,000. Number of shares, 10,000.—Amount of each share, $100.

Corporate Members.—Charles Lawrence Dunbar and Leo William Goetz, solicitors; Helen McTague, book-keeper; Elizabeth Winlow, stenographer, and John Sutherland, jr., insurance agent, all of Guelph, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Guelph, Ont.
Objects of the Company.—*Vide* p. 2863, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued March 10, 1919, to

"FREEMANS (LIMITED)."

Decreasing the capital stock of the said company from the sum of $500,000 to the sum of $50,000, such decreased capital stock to consist of 5,000 shares of $10 each.

Vide p. 2855, *Canada Gazette*, 1918-19.

"OTTAWA AND HULL REALTY COMPANY, LIMITED."

Incorporated March 11, 1919. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 1,000.—Amount of each share $50.

Corporate Members.—Henry Anthony Conroy, John Wilson Black and Joseph McLeod McAllister, civil servants; Patrick Hamlin Saver, merchant; and Henry Francis Hardy, manufacturer, all of Ottawa, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Ottawa, Ont.
Objects of the Company.—*Vide* p. 2868, *Canada Gazette*, 1918-19.

"CANADIAN RAILROADER, LIMITED."

Incorporated March 11, 1919. - - - - - - - - - Amount of capital stock, $50,000. Number of shares, 5,000.—Amount of each share, $10.

Corporate Members.—Eugène Réal Angers, Advocate; and Ethel Marion Thompson, stenographer, of Montreal, Que.; Henry Murray Gardner, accountant; Mary Theresa Brown and Isabel Wood, stenographers, of Westmount, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2869, *Canada Gazette*, 1918-19.

"JOSEPH BROTHERS, LIMITED."

Incorporated March 11, 1919. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Isidore Ballon, Bernard Goldenberg and Abraham Wilfred Muhlstock, advocates; Laurence Tannenbaum, notary; and Bernard Benjamin Joseph, merchant, all of Montreal, Que.

First or Provisional Directors.—Isidore Ballon, Laurence Tannenbaum and Bernard Benjamin Joseph.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2862, *Canada Gazette*, 1918-19.

"COMPAGNIE CHAPMAN DART, LIMITEE."
"CHAPMAN DART COMPANY, LIMITED."

Incorporated March 11, 1919. - - - - - - - - Amount of capital stock, $298,000. Number of shares, 2,980.—Amount of each share, $100.

Corporate Members.—Roch Albert Bergeron, notary; Germain Poulin, student-in-drugs; and Bibiane Lefebvre, stenographer, all three of Montreal, Que.; Louis Mercier, student-at-law, of Westmount, Que.; and Blanche McDougall, stenographer, of Verdun, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2919, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued March 12, 1919, to

"WALLINGFORD BROS., LIMITED."

Increasing the Capital Stock of the said company from the sum of $100,000 to the sum of $150,000, being an addition of 500 shares of $100 each to the present capital stock.

Vide p. 2855, *Canada Gazette*, 1918-19.

"MONTREAL PORTLAND CEMENT COMPANY, LIMITED."

Incorporated March 12, 1919. - - - - - - - - Amount of capital stock, $2,000,000. Number of shares, 20,000.—Amount of each share, $100.

Corporate Members.—John MacNaughton, advocate; Robert Houston, James Geary Cartwright, James Burnett Taylor and Andrew MacIntyre, managers, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief Place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2867, *Canada Gazette*, 1918-19.

"COMMERCIAL FINANCE CORPORATION, LIMITED."

Incorporated March 12, 1919. - - - - - - - - Amount of capital stock, $2,000,000. Number of shares, 20,000.—Amount of each share, $100.

Corporate Members.—Alfred William Briggs, and Ernest Macaulay Dillon, barristers-at-law; Malcolm Macleod, gentleman, Thomas Richard Tennant, broker; and Vida Isabel Harris, student-at-law, all of Toronto, Ont.

First or Provisional Directors.—Alfred William Briggs, Ernest Macaulay Dillon and Malcom Macleod.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 2865, *Canada Gazette*, 1918-19.

"McLAUGHLIN MOTOR CAR COMPANY, LIMITED."

Incorporated March 12, 1919. - - - - - - - Amount of capital stock, $10,000. Number of shares, 100.—Amount of each share, $100.

Corporate Members.—William Symon Morlock, Sydney Ellis Wedd and Roy Beverly Whitehead, solicitors; Samuel Davidson Fowler, solicitor's clerk; and Violet Moffat, accountant; all of Toronto, Ont.

First or Provisional Directors.—William Symon Morlock, Sydney Ellis Wedd and Samuel Davidson Fowler.

Chief place of Business.—Oshawa, Ont.

Objects of the Company.—*Vide* p. 2866, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued March 13, 1919, to

"LAGAR INVESTMENT, LIMITED."

Changing the corporate name of the said company to that of

"RIGHT INVESTMENT, LIMITED."

Vide p. 2854, *Canada Gazette*, 1918-19.

"CHEVROLET MOTOR COMPANY OF CANADA, LIMITED."

Incorporated March 13, 1919. - - - - - - - - Amount of capital stock, $10,000. Number of shares, 100.—Amount of each share, $100.

Corporate Members.—William Symon Morlock, Sydney Ellis Wedd and Roy Beverley Whitehead, solicitors; Samuel Davidson Fowler, solicitor's clerk; and Violet Moffat, accountant; all of Toronto, Ont.

First or Provisional Directors.—William Symon Morlock, Sydney Ellis Wedd and Samuel Davidson Fowler.

Chief place of Business.—Oshawa, Ont.

Objects of the Company.—*Vide* p. 2872, *Canada Gazette*, 1918-19.

" O. GAUTHIER, LIMITEE."

Incorporated March 13, 1919. - - - - - - - Amount of capital stock, $75,000. Number of shares, 750.—Amount of each share, $100.

Corporate Members.—Omer Gauthier, manufacturer of biscuits; Cléophas Gauthier, manager; Jean Henri Chaurette, accountant; Reina Dequire, wife separate as to property of Omer Gauthier, duly authorized in these presents by her husband, and Eva Brouillard, wife of Cléophas Gauthier, and duly authorized by the aforesaid, all of the City of Montreal, Que.

First or Provisional Directors.—Omer Gauthier, Cléophas Gauthier and Jean Henri Chaurette.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2919, *Canada Gazette*, 1918-19.

"McLAURIN LUMBER COMPANY, LIMITED."

Incorporated March 14, 1918. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Charles Harold Skelton, and Reginald Crawford Stevenson, chartered accountants; Frank Roger Walker, and Arthur Westman Knowles, accountants, and Rena Susan Knowlton, stenographer; all of Montreal, Que.

First or Provisional Directors.—Charles Harold Skelton, Reginald Crawford Stevenson and Arthur Westman Knowles.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2874, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"THE MITCHELL-HOLLAND COMPANY, LIMITED."

Incorporated March 14, 1919. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Walter Robert Lorimer Shanks, advocate; Francis George Bush, book-keeper; George Robert Drennan, stenographer; Herbert William Jackson and Michael Joseph O'Brien, clerks, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2871, *Canada Gazette*, 1918-19.

"THE P. H. SECORD & SONS CONSTRUCTION COMPANY, LIMITED."

Incorporated March 14, 1919. - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Roy Eldridge Secord and Claude Franklin Secord, manufacturers; William Arthur Hollinrake, County Court clerk; James Albert Scace, secretary-treasurer, and Albert Hawley Boddy, barrister-at-law, all of Brantford, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Brantford, Ont.

Objects of the Company.—*Vide* p. 2871, *Canada Gazette*, 1918-19.

"LUMBER AND TIES, LIMITED."

Incorporated March 14, 1919. - - - - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Louis Philippe Crepeau and Louis Athanase David, both of His Majesty's Counsel learned-in-the-law; Segfried Hinson Read Bush and Benjamin Robinson, advocates, and George Whittaker, accountant, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2873, *Canada Gazette*, 1918-19.

"JAMES COPEMAN, LIMITED."

(As a private company.)

Incorporated March 14, 1919. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—John Wesley Blair and Francis Joseph Laverty, both of His Majesty's Counsel learned-in-the-law, and Aimé Sydney Bruneau, advocate, all of Westmount, Que.; Charles Albert Hale, of Montreal West, Que., advocate, and Auguste Angers, of Montreal, Que., advocate.

First or Provisional Directors.—John Wesley Blair, Francis Joseph Laverty and Charles Albert Hale.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2855, *Canada Gazette*, 1918-19.

"GRIMSBY STEEL FURNITURE COMPANY, LIMITED."

Incorporated March 15, 1919. - - - - - - - - Amount of capital stock, $60,000. Number of shares, 6,000.—Amount of each share, $10.

Corporate Members.—Arthur Cecil Butterworth, clerk; William James McCoy, auditor; Isaac Leopold Leo and Harold Redferne Hollingshead, brokers; and Vera Mae Campbell, stenographer, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Grimsby, Ont.
Objects of the Company.—*Vide* p. 2874, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued March 17, 1919 to

"NORTHERN CONSTRUCTION COMPANY, LIMITED."

Converting the said company into a private company.
Vide p. 2855 *Canada Gazette*, 1918-19.

"MIDLAND WOODWORKERS, LIMITED."

Incorporated March 18, 1919. - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—William Symon Morlock, Sydney Ellis Wedd and Roy Beverley Whitehead, solicitors; Samuel Davidson Fowler, solicitor's clerk; and Violet Moffat, accountant; all of Toronto Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2961, *Canada Gazette*, 1918-19.

"OLIVER-BERKLEY, LIMITED."

Incorporated March 18, 1919. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Harry Carlton Mendoza, manufacturer's agent; Stanley Eli Marshall, salesman; Teresa O'Loughlin and Eleanor Gladys Fox, stenographers; and Ada Meta Splan, secretary; all of Toronto, Ont.
First or Provisional Directors.—Harry Carlton Mendosa, Stanley Eli Marshall and Teresa O'Loughlin.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 3035, *Canada Gazette*, 1918-19.

"OLIVER-LEE, LIMITED."

Incorporated March 18, 1919. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Nathan Phillips, George Francis Rooney and William Henry McGuire, barristers-at-law; Florence Alice Sweet, and Anna McCartney stenographers; all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 3034, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"THE A. R. WILLIAMS MACHINERY & SUPPLY COMPANY, LIMITED."
(As a Private Company.)

Incorporated March 19, 1919. - - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Gerald Augustine Coughlin, advocate, Francis George Bush, bookkeeper, George Robert Drennan, stenographer, Herbert William Jackson and Michael Joseph O'Brien, clerks, all of Montreal, Que.

First or Provisional Directors.—Gerald Augustine Coughlin, Francis George Bush and George Robert Drennan.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2952, *Canada Gazette*, 1918-19.

"ELECTRO TIN PRODUCTS, LIMITED."

Incorporated March 19, 1919. - - - - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—Bayard Geekie Cobb, of New York N.Y., U.S.A., engineer; William John Aikins, of Dunnville, Ont., manufacturer, John Beehtel Detwiler, manufacturer, Thomas Hendry, insurance broker, and William Thomas Henderson, King's Counsel, all of Brantford, Ont.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Brantford, Ont.

Objects of the Company.—*Vide* p. 3033, *Canada Gazette*, 1918-19.

Supplementary Letters Patent issued March 20, 1919 to

"ADAM HOPE & COMPANY, LIMITED,"

Increasing the capital stock of the said company from the sum of $75,000 to the sum of $500,000 being an addition of 4,250 shares of $100 each to the present capital stock.

Vide p. 2946, *Canada Gazette*, 1918-19.

"GOLDFINES, LIMITED."

Incorporated March 20, 1919. - - - - - - - - Amount of capital stock, $40,000. Number of shares, 4,000.—Amount of each share, $10.

Corporate Members.—Louis Goldfine and Henry Shapiro, merchants, Maurice Rosen, accountant, Marie Anne Daigle and Fabiola Perron, stenographers, all of Montreal, Que.

First or Provisional Directors.—Louis Goldfine, Maurice Rosen and Fabiola Perron.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2949, *Canada Gazette*, 1918-19.

"H. M. LANE COMPANY, LIMITED."

Incorporated March 20, 1919. - - - - - - - - Amount of capital stock, $10,000. Number of shares, 1,000.—Amount of each share, $10.

Corporate Members.—Henry Marquette Lane, of Highland Park, Mich., U.S.A., consulting engineer; Benjamin Towlen, accountant, and Charles Robert Seabrook, structural engineer, both of Detroit, Mich., U.S.A.; Avila Odilard Thomas, of Ford City, Ont., mechanical and civil engineer, and David William Fair Nichols, of Windsor, Ont., architect.

First or Provisional Directors.—The said corporate members.

Chief place of Business.—Windsor, Ont.

Objects of the Company.—*Vide* p. 2949, *Canada Gazette*, 1918-19.

"WESTERN ONTARIO COAL COMPANY, LIMITED."

Incorporated March 20, 1919. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Archibald James Reid, King's Counsel; Thomas Gulston Watson, tax commissioner; George Norman Limpricht, recording officer; Harry Reeve Burrows and Edmund Carew Cosgrove, clerks, all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2955, *Canada Gazette*, 1918-19.

"EXCELSIOR WAIST AND DRESS COMPANY, LIMITED."

(As a private company.)

Incorporated March 21, 1919. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Ben Bernstein, advocate; Benjamin Alfred Schwartz, student-at-law; Joseph Henri Hogue and Nathan Scheffer, clerks, and Harry Blaukoff, collector, all of Montreal, Que.
First or Provisional Directors.—Ben Bernstein, Benjamin Alfred Schwartz and Joseph Henry Hogue.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2957, *Canada Gazette*, 1918-19.

"THE NATIONAL LITHOGRAPHING COMPANY, LIMITED."

Incorporated March 21, 1919. - - - - - - - - Amount of Capital Stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Alfred Geoffrey Edwards, Thomas Patterson Geggie, and Theo James Macnamara, chartered accountants; Kris Austin Mapp and Charles Percy Roberts, accountants, all of Toronto, Ont.
First or Provisional Directors.—Alfred Geoffrey Edwards, Thomas Patterson Geggie, and Theo James Macnamara.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2952, *Canada Gazette*, 1918-19.

"ELY SHIRT COMPANY, LIMITED."

Incorporated March 21, 1919. - - - - - - - - Amount of capital stock, $40,000. Number of shares, 400.—Amount of each share, $100.

Corporate Members.—Ernest Frederick Ely, William Henry Ker, George Albert Sebeck, merchants; Ethel Reynolds Ely, married woman, and Daniel Webster Lang, solicitor, all of Toronto, Ont.
First or Provisional Directors.—Ernest Frederick Ely, George Albert Sebeck and William Henry Ker.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2955, *Canada Gazette*, 1918-19.

SESSIONAL PAPER No. 29

"HYDRO-CHEMICAL COMPANY, LIMITED."

Incorporated March 21, 1919. - - - - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—William John Moody, of Kitchener, Ont, manufacturer: Richard Ryan, contractor, and Omar Ellis, manager; both of Montreal, Que., Emil Schierholz, of Toronto, Ont., traveller; and George Davidson, of Woodstock, Ont., traveller.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 2960, *Canada Gazette*, 1918-19.

"SOCIAL SERVICE COUNCIL OF CANADA."

(Association.)

Incorporated March 21, 1919. - - - - - - - - - - - - Without share capital.

Corporate Members.—Lewis Norman Tucker, of London, Ont., clergyman; John G. Shearer and Gilbert Agar, secretaries; Frank Sanderson, actuary; Charles Joseph Copp, physician; Charles Leycester Ingles, George Campbell Pidgeon, and Peter Bryce, Clergymen; and William Edgar Raney, barrister; all of Toronto, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Toronto, Ont.
Objects of the Company.—*Vide* p. 2945, *Canada Gazette*, 1918-19.

"BRANT AMUSEMENTS, LIMITED."

Incorporated March 21, 1919. - - - - - - - Amount of capital stock, $500,000. Number of shares, 5,000.—Amount of each share, $100.

Corporate Members.—Ernest Moule, theatre manager; Claude Franklin Secord, contractor; William Thomas Henderson, King's Council, Albert Hawley Boddy, barrister-at-law; and Linda Knowles, stenographer; all of Brantford, Ont.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Brantford, Ont.
Objects of the Company.—*Vide* p. 2949, *Canada Gazette*, 1918-19.

"SCOTTISH RUBBER COMPANY, LIMITED."

(As a private company.)

Incorporated March 21, 1919. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Gui Casimir Papineau-Couture, Louis Fitch and Ben Bernstein, advocates; Abraham Saul Cohen, bookkeeper; and Lilian Freedman, stenographer; all of Montreal, Que.
First or Provisional Directors.—Gui Casimir Papineau-Couture, Louis Fitch and Ben Bernstein.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 3114, *Canada Gazette*, 1918-19.

"CAPUANO & PASQUALE COMPANY, LIMITED."

Incorporated March 21, 1919. - - - - - Amount of capital stock, $150,000. Number of shares, 1,500.—Amount of each share, $100.

Corporate Members.—Frank Callaghan and François Xavier Biron, advocates; Avila Gamache, broker, Ethel May Pierce, stenographer, and Isabel McGuire, clerk, all of Montreal, Que.

First or Provisional Directors.—The said corporate members.

Chief place of business.—Montreal, Que.

Objects of the Company.—*Vide* p. 2946, *Canada Gazette*, 1918-19.

"DUNNETT & STEWART, LIMITED."

(As a private company.)

Incorporated March 22, 1919. - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Peter Dunnett and James Macdonald Eakins, manufacturers, Stanley Stewart, clerk, and Wilma Ethel Coughtry, stenographer, all of Montreal, Que.; and Charles Henry Anerum, of Westmount, Que., accountant.

First or Provisional Directors.—James Macdonald Eakins, Charles Henry Anerum and Wilma Ethel Coughtry.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 3038, *Canada Gazette*, 1918-19.

"NORMAN E. LABERGE, LIMITED."

Incorporated March 22, 1919. - - - - - Amount of capital stock, $300,000. Number of shares, 3,000.—Amount of each share, $100.

Corporate Members.—Louis Athanase David and Louis Philippe Crepeau, both of His Majesty's Counsel learned-in-the-law, Segfried Hinson Read Bush, advocate, George Whittaker, accountant, and Alec. Phelps Grigg, student-at-law, all of Montreal, Que.

First or Provisional Directors.—Louis Athanase David, Louis Philippe Crepeau, and Segfried Hinson Read Bush.

Chief place of Business.—Montreal, Que.

Objects of the Company.—*Vide* p. 3040, *Canada Gazette*, 1918-19.

"THE MESSAGE PRESERVING COMPANY, LIMITED."

Incorporated March 22, 1919. - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Frederick Bringkmann, Alfred Ernest Message and John Casson, manufacturers, Francis Harvey Snyder, solicitor, and John Lennox, butcher (senior), Esquire, all of Toronto, Ont.

First or Provisional Directors.—Frederick Bringkmann, Alfred Ernest Message and Francis Harvey Snyder.

Chief place of Business.—Toronto, Ont.

Objects of the Company.—*Vide* p. 3111, *Canada Gazette*, 1918-19.

"SATAURISKI LUMBER COMPANY, LIMITED."

Incorporated March 22, 1919. - - - - - - - Amount of capital stock, $200,000. Number of shares, 2,000.—Amount of each share, $100.

Corporate Members.—Gordon Walters MacDougall, advocate and King's counsel; William Bridges Scott, and Linton Hossie Ballantyne, advocates; James Geary Cartwright, accountant; and Elsie Campbell Winter, stenographer; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Village of Donnacona, Que.
Objects of the Company.—*Vide* p. 2958, *Canada Gazette*, 1918-19.

"THE STEPHENSON ROBILLARD COMPANY, LIMITED."

Incorporated March 22, 1919. - - - - - - - - Amount of capital stock, $25,000. Number of shares, 250.—Amount of each share, $100.

Corporate Members.—René Robillard, jeweller; Joseph Carle Hamburg Zoden, and William John Alfred Stephenson, engravers; Walter Lambert, accountant; all of Montreal, Que.: and Edmund Eaves, merchant, of Westmount, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 3039, *Canada Gazette*, 1918-19.

"GREENBERG WOOLLENS, LIMITED."

Incorporated March 24, 1919. - - - - - - - - Amount of capital stock, $50,000. Number of shares, 500.—Amount of each share, $100.

Corporate Members.—Isidore Ballon, Bernard Goldenberg, and Abraham Wilfred Muhlstock, advocates; Laurence Tannenbaum, notary; and Abraham Greenberg, merchant; all of Montreal, Que.
First or Provisional Directors.—Isidore Ballon, Laurence Tannenbaum, and Abraham Greenberg.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 3041, *Canada Gazette*, 1918-19.

"INTERNATIONAL MACHINERY & SUPPLY COMPANY, LIMITED."

(As a private company.)

Incorporated March 25, 1919. - - - - - - - - Amount of capital stock, $100,000. Number of shares, 1,000.—Amount of each share, $100.

Corporate Members.—Frederick Henry Markey, Waldo Whittier Skinner, and George Gordon Hyde, all of His Majesty's counsel learned-in-the-law, and John Gerard Ahern, advocate; and Ronald Cameron Grant, accountant; all of Montreal, Que.
First or Provisional Directors.—The said corporate members.
Chief place of Business.—Montreal, Que.
Objects of the Company.—*Vide* p. 3039, *Canada Gazette*, 1918-19.

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COMMISSIONS TO PUBLIC OFFICERS.

List of Public Officers to whom Commissions have been issued from April 1, 1918, to March 31, 1919.

Name.	Office or Appointment.	Date.	When Gazetted.
Acres, Andrew Graham.	Postmaster at City of Ottawa, Ont	Feb. 11, '18...	Mar. 23, '18.
Brown, Hon. James Thomas	Chief Justice, Court of King's Bench for Saskatchewan	Mar. 2, '18....	Mar. 2, '18.
Bennett, Albert Watson.	Judge of County Courts of Westmoreland and Kent in the Province of New Brunswick	May 27, '18 ..	June 8, '18.
Black, John	Commission to discharge the duties of Hon. C. D. Macauley, Judge of the Territorial Court of the Yukon Territory during absence of said Judge	Aug. 17, '18...	Sept. 21, '18.
Bailey, Ernest S	Fishery Officer, in the Fisheries Protective Service of Canada	Nov. 29, '18...	Dec. 14, '18.
Boyce, Arthur Cyril	A member of the Board of Railway Commissioners	Oct. 4, '18....	Dec. 21, '18.
Chisholm, *et al*, Hon. Joseph Andrew	Commissioners to enquire into and report upon unrest in mining and steel industries in Nova Scotia	April 22, '18..	May 4, '18.
Dennistoun, Robert Maxwell	Judge of the Court of Appeal for Manitoba, with the style and title of Judge of Appeal	July 2, '18...	July 27, '18.
de Lorimier, Albert Emmanuel	Puisne Judge of the Superior Court in and for the Province of Quebec	Sept. 19, '18..	Sept. 28, '18.
Davies, Sir Louis Henry.	Chief Justice of the Supreme Court of Canada	Oct. 23, '18 ...	Oct. 31, '18.
Eberts, Hon. David Mac-Ewan	A Commissioner to investigate and report upon the wastage of herring and salmon in connection with purse-seine fishing in the Barkley Sound District, B.C.	Jan. 20, '19...	Jan. 25, '19.
Eberts, Hon. David Mac-Ewan	Commission extending investigation at Barkley Sound, B.C.	Mar. 14, '19 ..	Mar. 22, '19.
Fitzpatrick, Right Hon. Sir Charles	Lieutenant Governor of the Province of Quebec	Oct. 21, '18 ..	Oct. 26, '18.
Gauld, John Gordon	Junior Judge of the County Court for the County of Wentworth in the Province of Ontario	April 17, '18 ..	May 4, '18.
Gauld, John Gordon	Local Judge of the High Court Division of the Supreme Court of the Province of Ontario with the style and title of Local Judge of the Supreme Court	April 17, '18 ..	May 4, '18.
Gibsone, George Farrar.	Puisne Judge of the Superior Court in and for the Province of Quebec.	Nov. 7, '18....	Nov. 16, '18.
Gordon, Sir Charles Blair	A Member and Chairman of the Canadian Trade Commission	Dec. 6, '18....	Dec. 21, '18.
Harris, Lloyd	Chairman of the Canadian Mission, London, England	Nov. 8, '18....	Nov. 16, '18.
Hodgins, Hon. Frank Egerton	A Commissioner to enquire into and report upon the treatment of the men of the Canadian Expeditionary Force on board the transport S. S. Northland	Jan. 2, '19 ..	Jan. 11, '19.
Johnson, Thomas Herman	Commission as one of His Majesty's Counsel	Feb. 24, '18...	Mar. 22, '18.
de Lorimier, Albert Emmanuel	Puisne Judge, Superior Court, in and for the Province of Quebec	Sept, 19, '18..	Sept. 28, '18.
Loranger, Louis Joseph Maurice	Puisne Judge of the Superior Court for the Province of Quebec, District of Joliette	Sept. 19, '18..	Sept. 28, '18.

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LIST OF PUBLIC OFFICERS to whom Commissions have been issued from April 1, 1918, to March 31, 1919.—*Continued.*

Name.	Office or Appointment.	Date.	When Gazetted.
Lamothe, Jean Baptiste Gustave	Chief Justice of the Court of King's Bench for the Province of Quebec	Sept. 19, '18	Sept. 28, '18
Logie, William Alexander	Judge of the Supreme Court of Ontario and a Member of the High Court Division of said Court	Sept. 30, '18	Oct. 12, '18.
Lamothe, Hon. Jean Baptiste Gustave	Commission as Administrator of the Government of the Province of Quebec, during the absence of the Lieutenant Governor	Oct. 16, '18	Oct. 36, '18.
Maclennan, Farquhar Stuart	Commissioner to investigate into and report upon conduct of Military Officers re the Chambly and Vercheres election. (Part I, of the Inquiries Act, R.S.C., 1906)	June 10, '18	June 22, '18.
Mathers, *et al*, Hon. Thomas Graham	Commission to investigate into and report upon labour trouble in Winnipeg, Manitoba	June 26, '18	July 6, '18.
Maclennan et al, Hon. Farquhar Stuart	Commissioners to investigate into and report upon the unrest in the Province of Quebec shipbuilding industry	July 29, '18	Aug. 10, '18.
Martin, John Edward	Puisne Judge of the Court of King's Bench in and for the Province of Quebec	Sept. 19, '18	Sept. 28, '18.
Mignault, Pierre Basile	Puisne Judge of the Supreme Court of Canada	Oct. 25, '18	Oct. 31, '18.
Macdonald, Hon. James Alexander	Commission as Aministrator of the Government of the Province of British Columbia during the absence of the Lieutenant Governor	Dec. 10, '18	Dec. 14, '18.
Macdonald, Hon. James Alexander	Extending the period of his administration of the Government of the Province of British Columbia	Jan. 17, '19	Feb. 1, '19.
Murphy et al, Hon. Denis	Commissioners to enquire into and report concerning the relations between the firm of J. Coughlin & Sons, and its employees	Feb. 6, '19	Feb. 15, '19.
McLean, Simon James	Member of the Board of Railway Commissioners for Canada	Nov. 8, '18	Nov. 16, '18.
Perdue, Hon. William Egerton	Chief Justice of the Court of Appeal for Manitoba	May 25, '18	June 8, '18.
Parker, Joseph Henry	Judge of the District Court of the Judicial District of Yorkton, Sask	Sept. 7, '18	Sept. 14, '18.
Robertson, Gideon Decker	Minister of Labour of Canada	Nov. 7, '18	Nov. 16, '18.
Rolph, Frank	Chairman of the Canadian War Mission in U.S.A.	Nov. 8, 18	Nov. 16, '18.
Rutherford, John Gunion	Member of the Board of Railway Commissioners for Canada	Nov. 8, 18	Nov. 16, '18.
Robb et al, Thomas	Commissioners to investigate into and report upon all matters connected with the pilotage systems in operation at the ports of Halifax, St. John, Sydney, etc.	Mar. 28, '18	Jan. 4, '19.
Robb et al, Thomas	Commissioners to investigate into and report upon all matters connected with the pilotage systems and their administration at the Ports of Victoria, Vancouver, New Westminster and Nanaimo, B.C.	Mar. 28, '18	Jan. 4, '19.
Sifton, Hon. Arthur Lewis	Minister of the Department of Customs and Inland Revenue	May 18, '18	May 25, '18.

REPORT OF NATURALIZATION BRANCH, DEPARTMENT OF THE SECRETARY OF STATE.

OTTAWA, April 1, 1919.

The Honourable MARTIN BURRELL,
Secretary of State of Canada.

SIR,—I have the honour to submit for your information the following statement of the work of the Naturalization Branch of the Department of the Secretary of State for the year ending March 31, 1919,

The number of certificates of naturalization granted under the Naturalization Act, 1914, for the twelve months ended December 31, 1918, was 194. A schedule showing the former nationalities of persons naturalized under the Naturalization Act, 1914, as registered in this branch during the twelve months ending December 31, 1918, follows:—

SCHEDULE showing former nationalities of persons naturalized under the Naturalization Act, 1914, during the twelve months ended December 31, 1918.

Americans	11	Norwegians	34
Belgians	8	Roumanians	6
Chinese	2	Russians	9
Danes	16	Serbians	3
Dutch	18	Spanish	3
French	7	Swedes	37
Germans	1	Swiss	10
Greeks	4	Re-admissions	4
Italians	5		
Japanese	15	Total	194
Luxembourgers	1		

I have the honour to be, sir,
Your obedient servant,

THOMAS MULVEY,
Under Secretary of State.

REPORT OF THE WAR CHARITIES BRANCH.

OTTAWA, April 1, 1919.

The Honourable MARTIN BURRELL,
Secretary of State of Canada.

SIR,—I have the honour to report with respect to the administration of the War Charities Act, 1917, that during the fiscal year just closed 742 societies were formally registered as War Charities. The year has consequently been one of sustained activity in the War Charities Branch. The half-yearly returns received furnish most striking evidence of the generosity of the Canadian people in supporting war funds as well as of the energy and devotion with which they applied themselves to the winning of the war. The amount raised by registered War Charities as shown by these returns has reached an approximate total of $11,000,000, not including contributions to the Patriotic and Red Cross Funds both of which are registered as War Charities. The amount contributed to the Patriotic Fund from its inauguration up to August 1, 1919, is $47,268,812.82; to the Red Cross Fund up to the 31st December, 1918, $8,371,982.28, besides supplies to the estimated total value of $14,257,000. A list of the societies registered during the fiscal year follows:—

Name.	Head Office.	Date.	President or Regent.	Secretary.
Ontario Women's Christian Temperance Union.	London, Ont.	March 21	Mrs. H. A. Stevens.	Mrs. H. M. Detlor.
Returned Soldiers Club of Vancouver	Vancouver, B.C.	March 22	W. G. Murrin	J. R. V. Dunlop.
Relief Work for the Victims of the War in Belgium.	Montreal, Que.	March 22	M. Goor	L. S. Colwell.
Women's Auxiliary to the 68th Battery, C.F.A.	Vancouver, B.C.	March 27	Mrs. Amy Clay	Mrs. E. Wilson.
29th Battalion Social Association	Vancouver, B.C.	March 30	Lieut. Ed. Gallant	Thomas Ross.
Women's Auxiliary to the 158th Battalion, C.E.I.	Vancouver, B.C	March 30	Mrs. Olive Cripps	Mrs. L. Milne.
Erie Chapter of the Imperial Order Daughters of the Empire.	St. Thomas, Ont	March 30	Mrs. Laura A. Stewart (Regent).	Mrs. J. M. Ermatinger.
National Chapter of the Imperial Daughters of the Empire.	Toronto, Ont.	April 2	Mrs. A.E.Gooderham	Mrs. R. S. Wilson.
South Vancouver Soldiers' and Sailors' Mothers' and Wives' Association.	Vancouver, B.C.	April 4	Mrs. Norah Leavy.	Mrs. F. Treavor.
Canadian War Hospital Fund for Serbia, Montenegro and Macedonia.	Winnipeg, Man	April 4	F. W. E. Burnham	Miss E. Chambers.
War Relief Club of Copper Cliff.	Copper Cliff, Ont	April 6	G. E. Silvester.	E. C Lambert.
Comfort League of the 124th Battalion, G.G B.A.	Toronto, Ont.	April 6	Mrs. M. Chadwick	Mrs. H. N. Moleswort
Women's Canadian Club of Victoria, B.C	Victoria, B.C.	April 10	Mrs. F. A. McDiarmid	Mrs. E. M. Brown.
Ingersoll 3,000 Club	Ingersoll, Ont	April 6	C. H. Sumner.	R. B. Hutt.
War Auxiliary, School Section, 27, Todmorden.	Todmorden, Ont.	April 2	Mrs. M. H. W. Fleming.	Mrs. A. Crossley.
Parkdale Soldiers Comforts Society	Toronto, Ont.	April 6	Mrs. A. Harvey	Mrs. A. Seroggie
Ladies Kahki Club of Petrolia.	Petrolia, Ont	April 4	Miss R. F. Sinclair.	Miss D. McIntosh.
North Augusta Patriotic League	North Augusta, Ont	April 4	Mrs. Clara Warren	Mrs. G. A. Love.
Returned Soldiers Aid and War Widows' Association.	Winnipeg, Man	April 2	R. D. Waugh	C. A. L. Wilson.
Canadian National Institute for the Blind	Toronto, Ont.	April 11	C. R. Dickson	C. R. Dickson.
Montreal Soldiers' Wives' League	Montreal, Que.	April 15	Mrs. E. B. Busteed	Mrs. E. J. Woodburn.
Canadian Patriotic Fund	Ottawa, Ontario	April 13	His Excellency the Duke of Devonshire, K.G., G.C.M.G., G.C.V.O., P.C., etc	Sir Herbert Ames.
Laurentian Chapter of the Imperial Order Daughters of the Empire.	Ottawa, Ont	April 10	Lady Kingsmill	Mrs. E. L. B. Housto
Women's Auxiliary to the Forestry Battalions.	Vancouver, B.C.	April 10	Mrs. M. S. McMaster	Mrs. J. Forest.
Home Advisory Association of the 75th Overseas Battalion.	Toronto, Ont.	April 15	Lewis A. Stewart	W. J. Lindsay.
Stratford Municipal Chapter of the Imperial Order Daughters of the Empire.	Stratford, Ont	April 23	Mrs. S. R. McConkey (Regent).	Miss Mary McIntosh.
Duke of Devonshire Chapter of the Imperial Order Daughters of the Empire.	Acton, Ont	April 23	Mrs. D. McNiven (Regent).	Mrs. W. K. Graham.
Sir John Graves Simcoe Chapter of the Imperial Order Daughters of the Empire	Simcoe, Ont	April 18	Mrs. R. Edmonds (Regent).	Mrs. A T. Sibler.

LIST of War Charity Societies Registered during Fiscal Year.—*Continued.*

Name.	Head Office.	Date.	President or Regent.	Secretary.
Bastion Chapter of the Imperial Order Daughters of the Empire.	Nanaimo, B.C....	April 17	Mrs. T. W. Martindale (Regent).	Mrs. T. Spencer.
Women's Patriotic League of Petrolia...	Petrolia, Ont.....	April 18	Mrs. A. Lancaster.....	Miss Jennie Ford.
Ladies Committee of the Princess Patricia's Canadian Light Infantry.	Montreal, Que.....	April 15	Mrs. C. B. Keenan....	Mrs. Philip MacKenzie.
Philemon Wright Chapter of the Imperial Order Daughters of the Empire.	Ottawa, Ont.....	April 24	Madame de G. Languedoc (Regent).	Mrs. A. Horwood.
Women's Patriotic League....	Toronto, Ont.....	April 22	Mrs. E. Cummings....	Mrs. F. B. Fetherstonhaugh.
Medicine Hat Great War Next-of-Kin Association.	Medicine Hat, Alta.	April 22	Mrs. A. Gillespie.....	Mrs. Byers.
Woodstock 5,000 Club	Woodstock, Ont.....	April 23	J. G. Wallace.....	J. G. McBeath.
Ganges Chapter of the Imperial Order Daughters of the Empire.	Ganges, B.C.....	April 22	Mrs. C. Baker (Regent).	Mrs. E. Walter.
Tilbury Chapter of the Imperial Order Daughters of the Empire.	Tilbury, Ont.....	April 20	Mrs. Smith (Regent)	Mrs. Odette.
Newcastle Women's Patriotic League	Newcastle, Ont.....	April 23	Miss A. Drummond...	Miss B. S. McIntosh.
Niagara Rangers Chapter of the Imperial Order Daughters of the Empire.	Niagara Falls, Ont.	April 22	Mrs. E. Kellam (Regent.)	Miss L. Byers.
Soldier's Comfort Club of Lakefield....	Lakefield, Ont.....	April 25	Mrs. B. Marling.....	Mrs. R. Johnson.
National Council of Women of Canada	Toronto, Ont.....	April 25	Mrs. R. Torrington	Mrs. Geo. Watt.
Montreal Municipal Chapter, Imperial Order Daughters of the Empire.	Montreal, Que.....	April 25	Mrs. W. G. Hodgson (Regent).	Mrs. T. M. Searmouth
Prince of Wales Chapter of the Imperial Order Daughters of the Empire.	Paris, Ont.....	April 25	Mrs. G. Temple (Regent).	Mrs. A. J. Sinclair.
Women's Patriotic League of Brockville.	Brockville, Ont....	April 26	Mrs. M. W. Fulford	Miss C. L. Hitchcock.
Lord Amherst Chapter of the Imperial Order Daughters of the Empire.	Amherst, N.S.....	April 26	Mrs. J. H. Douglas (Regent).	Mrs. N. C. Rodger.
Frontenac Chapter of the Imperial Order Daughters of the Empire.	Kingston, Ont.....	April 26	Mrs. T. G. Smith (Regent)	Mrs. A. Ellis.
Longue Sault Chapter of the Imperial Order Daughters of the Empire.	Cornwall, Ont.....	April 26	Mrs. J McMartin (Regent).	Miss Ida Cline.
King George Chapter of the Imperial Order Daughters of the Empire.	St. Johns, Que.....	April 26	Miss L. Evans (Regent).	Mrs. E. Loughtin.
Saugeen Chapter of the Imperial Order Daughters of the Empire.	Hanover, Ont.....	April 27	Miss L. R. Martin (Regent).	Miss E. Kuehner.
Duke of Argyle Chapter of the Imperial Order Daughters of the Empire.	Warkworth, Ont...	April 29	Mrs. L. Armstrong (Regent).	Mrs. E. Mulhera.
Washakado Chapter of the Imperial Order Daughters of the Empire.	Elkhorn, Man.....	April 27	Mrs. M. A. Thompson (Regent).	Mrs. J. McCorkindale.
Neepawa Chapter of the Imperial Order Daughters of the Empire.	Neepawa, Man.....	April 29	Mrs. J. W. Pattison (Regent).	Mrs. L. V. Norman.
Women's Christian Temperance Union of Winnipeg District.	Winnipeg, Man.....	April 29	Mrs. A. L. Grant.....	Mrs. S. Norris.
Deer Park Women's Patriotic League.....	Toronto, Ont.....	April 29	Mrs. Chas. Walker...	Miss M. S. Gagen.
Prince Charlie Chapter of the Imperial Order Daughters of the Empire.	Kingston, Ont.....	April 29...	Miss B. Smythe, (Regent).	Miss J. Smith.
Keewaydin Chapter of the Imperial Order Daughters of the Empire.	High River, Alta...	April 29..	Mrs. F. Brazil, (Regent).	Mrs. H. E. Bedingford.
Balaklava Chapter of the Imperial Order Daughters of the Empire.	Norham, Ont.....	April 30...	Mrs. L. Denike, (Regent).	Miss M. Cliffe.
Forestville No. 505 Chapter of the Imperial Order Daughters of the Empire.	Austia, Man.....	April 30.....	Mrs. D. Johnson, (Regent).	Miss M. McDonald.
H.M.S. Shannon Chapter of the Imperial Order Daughters of the Empire.	Dartmouth, N.S...	April 30.....	Miss L. McKay, (Regent).	Mrs. A. M. Fleming.
Vimy Ridge Chapter of the Imperial Order Daughters of the Empire.	Vernon, B.C.....	April 27....	Mrs. A. G. McCosh, (Regent).	Mrs. G. L. Dyke.
Great War Veterans Heroes Chapter of the Imperial Order Daughters of the Empire.	Hamilton, Ont.....	May 1.....	Mrs. F. Brennan	Miss M. Kennedy.
Fort McLeod Chapter of the Imperial Order Daughters of the Empire.	McLeod, Alta.....	May 1. ...	Mrs. Starnes.	Mrs. T. B. Martin.
Bertram Denison Chapter of the Imperial Order Daughters of the Empire.	Innisfail, Alta	May 1....	Mrs. F. Macome, (Regent).	Mrs. P. Grasse.
Major E. L. Knight Chapter of the Imperial Order Daughters of the Empire.	Colliagwood, Oat.	May 1.. ..	Miss J. Gregory, (Regent).	Miss V. K. O'Brien.
John Peel Chapter of the Imperial Order Daughters of the Empire.	Uxbridge, Ont.....	May 1.....	Mrs. D. Hepburn, (Regent).	Mrs. H. Cooke.
Dr. Frank Lundy Chapter of the Imperial Order Daughters of the Empire.	Poplar Point, Man.	May 1.....	Mrs. W. G. Potter, (Regent).	Mrs. W. Leslie.
Lord Cromer Chapter of the Imperial Order Daughters of the Empire.	Cromer, Man.....	May 1.....	Mrs. W. Turner	Mrs. T. Turnbull.
Stadacona Chapter of the Imperial Order Daughters of the Empire.	Quebec, Que.....	May 1.. ..	Mrs. J. C. McLimont.	Mrs. A. J. Turner.
Otohanee Chapter of the Imperial Order Daughters of the Empire.	Peterboro, Oat.....	May 1....	Mrs. A. E. Coulthead	Miss H. Denison.
Osnabruck Chapter of the Imperial Order Daughters of the Empire.	Osnabruck, Oat.....	May 1.. ..	Miss J. Morgaa.....	Miss G. A. Harte.
Lucknow Chapter of the Imperial Order Daughters of the Empire.	Wheatland, Man.	May 2.....	Mrs. Bicknell.....	Miss I. White.
Sydenham Court Chapter of the Imperial Order Daughters of the Empire.	Dresden, Oat.....	May 2.. ..	Mrs. O. McVean.	Mrs. F. Myors.
Sister Agnes Keyser Chapter of the Imperial Order Daughters of the Empire.	Chemainus, B.C...	May 2.....	Mrs. Halhed....	Mrs. R. Carnac.

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List of War Charity Societies Registered during Fiscal Year.—*Continued.*

Name.	Head Office.	Date.	President or Regent.	Secretary.
Blair Haverson Chapter of the Imperial Order Daughters of the Empire.	Carman, Man.	May 2.	Mrs. I. Raymond.	Miss L. Snydal.
Deer Park Women's Patriotic League	Toronto, Ont.	April 29.	Mrs. C. Walker.	Miss M. E. Gagnon.
Strathcona Chapter, Imperial Order Daughters of the Empire.	Toronto, Ont.	April 26.	Miss H. Fudger (Regent).	Miss A. M. Austin.
Campbellford Chapter, Imperial Order Daughters of the Empire.	Campbellford, Ont.	April 29.	Mrs. E. J. Free (Regent).	Mrs. A. Haig.
Tantramar Chapter of the Imperial Order Daughters of the Empire.	Amherst, N.S	April 29.	Miss J. Adamson (Regent).	Miss B. D. Downey.
Queen Anne Chapter of the Imperial Order Daughters of the Empire.	Kitchener, Ont.	April 29.	Miss F. Clement (Regent).	Mrs. F. C. Purves.
Captain Hooper Chapter, Imperial Orde Daughters of the Empire.	rCarleton Place, On	t.April 29.	Mrs. J. Gobeil (Regent).	Miss E. C. Lowe.
Mount Fernie Chapter of the Imperial Order Daughters of the Empire.	Fernie, B.C.	April 29.	Mrs. G. G. Moffatt (Regent).	Mrs. A. B. Trites.
Lady Dufferin Chapter, Imperial Order Daughters of the Empire.	Ingersoll, Ont.	April 30.	Mrs. J. H. Harris (Regent).	Mrs. T. Sheldon.
Kirkella Chapter of the Imperial Order Daughters of the Empire.	Elkhorn, Man.	April 30.	Mrs. J. Lemon (Regent).	Mrs. J. W. King.
Dufferin Rifle Chapter of the Imperial Order Daughters of the Empire.	Brantford, Ont.	April 30.	Mrs. J. Coghill (Vice-(Regent).	Mrs. M. A. Boyce.
O. A. C. Chapter of the Imperial Order Daughters of the Empire.	Guelph, Ont.	April 30.	Miss E. Hodgins (Regent).	Miss C. Lawson.
Sutton West Girls Patriotic League	Sutton, Ont.	May 1.	Miss L. Holborn.	Miss F. B. Anderson.
Ottawa Women's Canadian Club.	Ottawa, Ont.	May 2.	Lady Foster.	Mrs. E. W. Thomas.
Cataraqui Chapter of the Imperial Order Daughters of the Empire.	Kingston, Ont.	May 2.	Mrs. C. Macnee (Regent).	Mrs. H. C. Nickle.
Hampton Court Chapter of the Imperial Order Daughters of the Empire.	Hampton, Ont.	April 30.	Miss H. Barnes (Regent).	Miss A. K. Spooner.
Major McBride Chapter of the Imperial Order Daughters of the Empire.	Alexander, Man.	May 2.	Mrs. V. Shore (Regent).	Mrs. H. E. Jackson.
Franklin Hall Chapter of the Imperial Order Daughters of the Empire.	Montreal, Que.	May 2.	Mrs. H. Borden (Regent).	Miss E. Holland.
57th Regiment Chapter of the Imperial Order Daughters of the Empire.	Peterboro, Ont.	May 2.	Mrs. J. Eastwood (Regent).	Mrs. C. Jamieson.
Mary Gooderham Chapter of the Imperial Order Daughters of the Empire.	Windsor, Ont.	May 2.	Miss E. Bowlby (Regent).	Miss E. Hackett.
Britomhart Chapter of the Imperial Order Daughters of the Empire.	Port Dover, Ont.	May 2.	Mrs. O. Hobbs (Regent).	Mrs. H. Barrett.
John Milton Chapter of the Imperial Order Daughters of the Empire.	Milton, Ont.	May 3.	Mrs. E. Yates (Regent).	Mrs. J. P. Book.
Tipperary Club of Brockville	Brockville, Ont	May 7.	Mrs. J. A. MacDonell	Miss E. Smart.
Westmount Soldiers' Wives League	Westmount, Que.	May 6.	Mrs. W. Rutherford.	Mrs. T. G. Stewart.
Canadian Convalescent Home for Officers in France.	Toronto, Ont.	May 6.	Mrs. W. Ross.	Mrs. G. H. Burnam.
Union Jack Club of Shelburne	Shelbourne, Ont.	May 6.	Mrs. A. B. Tipling.	Mrs. Dickson'
United Empire Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man.	May 3.	Mrs. G. Henson (Regent).	Mrs. R. Rowan.
Senator Coffey Chapter of the Imperial Order Daughters of the Empire.	London Ont	May 2.	Mrs. R. Fallon (Regent).	Miss K. Dromgole.
Julius Richardson Chapter of the Imperia Order Daughters of the Empire.	lChateauguay, Basin, Ont.	May 4.	Mrs. E. Dickenson (Regent).	Mrs. G. Hornsell, Sr.
Joseph Howe Chapter of the Imperial Order Daughters of the Empire.	Hazel Hill, N.S.	May 4.	Mrs. E. C. Whitman (Regent).	Mrs. E. J. Demont.
Flora Farran Chapter of the Imperial Order Daughters of the Empire.	Farran Point, Ont.	May 4.	Mrs. G. Daley (Regent).	Miss V. Kerr.
La Coulette Chapter of the Imperial Order Daughters of the Empire.	Manson, Man.	May 4.	Mrs. E. Benson (Regent).	Miss J. McDonald.
Kent Chapter of the Imperial Order Daughters of the Empire.	Ridgetown, Ont.	May 2.	Mrs. D. Marr (Regent).	Mrs. P. Bowyer.
Princess of Wales Chapter of the Imperial Order Daughters of the Empire.	Kitchener, Ont.	May 4.	Miss L. Bruce (Regent).	Mrs. J. Fennell.
Wilson Chapter of the Imperial Order Daughters of the Empire.	Oilbert Plains, Man.	May 2.	Mrs. C. Finmen (Regent).	Miss A. Fraser.
Sir James Whitney Chapter of the Imperial Order Daughters of the Empire.	Brandon, Man.	May 4.	Mrs. J. B. McGregor (Regent).	Mrs. W. Jewell.
Longfellow Chapter of the Imperial Order Daughters of the Empire.	Waterloo, Que.	May 3.	Mrs. J. Symons (Regent).	Miss H. Middleton.
General Turner Chapter of the Imperial Order Daughters of the Empire.	Quebec, Que	May 4.	Mrs. H. Foy (Regent)	Mrs. H. Sewell.
Walter Musson Chapter of the Imperial Order Daughters of the Empire.	Wainwright, Alta.	May 3.	Mrs. C. Crampton (Regent).	Mrs. N. S. Kenny.
24th Kent Regiment Chapter of the Imperial Order Daughters of the Empire.	Chatham, Ont.	May 6.	Mrs. L. Kerr (Regent).	Mrs. P. Morley.
Victoria Guelph Chapter of the Imperial Order Daughters of the Empire.	Guelph, Ont.	May 6.	Miss E. Holliday (Regent).	Mrs. M. Unwin.
Princess Mary Victoria Chapter of the Imperial Order Daughters of the Empire	Windsor, Ont	May 3.	Miss A. Mann (Regent).	Miss R. Jaffray.
Border Chapter of the Imperial Order Daughters of the Empire.	Windsor, Ont	May 2.	Mrs R. Campbell (Regent).	Mrs. P. Thompson.
Lt. Col. Campbell Becher Chapter of the Imperial Order Daughters of the Empire.	London, Ont.	May 6.	Mrs. F. Greenway (Regent).	Mrs. A. McWilliams.
Major Hamilton Gault Chapter of the Imperial Order Daughters of the Em. niro	London, Ont.	May 6.	Mrs. A. Brown (Regent).	Mrs. F. Marshall.

List of War Charity Societies Registered during Fiscal Year.—*Continued.*

Name.	Head Office.	Date.	President or Regent.	Secretary.
Thomas G Delamere Chapter of the Imperial Order Daughters of the Empire.	Stratford, Ont	May 4..	Mrs. S. Richardson (Regent).	Mrs. G. H. Gibb.
General Brough Chapter of the Imperial Order Daughters of the Empire.	Goderich, Ont	May 6.	Mrs. Williams (Regent).	Miss C. Le Tousel.
Major Jack Ross Chapter of the Imperial Order Daughters of the Empire.	Lethbridge, Alta	May 7	Mrs. H. Conybeare (Regent)	Mrs. H. Delong.
St. Lawrence Chapter of the Imperial Order Daughters of the Empire.	Cornwall, Ont..	May 6.	Miss Thoebold Regent).	Mrs. W. Phillips.
Municipal Chapter of the Imperial Order Daughters of the Empire	Quebec, Que	May 6..	Mrs. C. Finnis (Regent).	Miss M. McNaughton
Admiral Wemyss Chapter of the Imperial Order Daughters of the Empire	Austin, Ont.	May 6.	Mrs. A. Pickering. (Regent).	Mrs. W. Hubble.
Janey Cannuck Chapter of the Imperial Order Daughters of the Empire.	London, Ont	May 5. ...	Miss C. Fitchett (Regent).	Mrs. A Smith.
Waterloo Chapter of the Imperial Order Daughters of the Empire.	Galt, Ont	May 5..	Mrs. B. Briscoe (Regent).	Mrs. W. Lewis.
Ypres Chapter of the Imperial Order Daughter of the Empire.	McAuley Man...	May 7..	Mrs. J. Wilson. (Regent).	Mrs. M Baird.
Wellington Chapter of the Imperial Order Daughters of the Empire.	Sherbrooke, Que .	May 7..	Mrs. L. Hume (Regent).	Mrs. N. Wally.
Walkerville Chapter of the Imperial Order Daughters of the Empire.	Walkerville, Ont ...	May 6..	Mrs. C. Stodgell (Regent).	Mrs. H. McKim.
Captain Jackson Chapter of the Imperial Order Daughters of the Empire.	Stonewall, Man	May 7.	Mrs. H Arundel (Regent).	Mrs. H. Urquhart.
Britannia Chapter of the Imperial Order Daughters of the Empire.	MacGregor, Man...	May 7.	Mrs. W. Young... (Regent).	Mrs. W. Cairns.
Sae au dos de 1914..	Montreal, Que.. .	May 13.	R. Venoat	J. P. Chevassu.
Women's Patriotic League of Cache Bay.	Cache Bay, Ont.....	May 3.	Mrs. M. Roxburgh	Mrs. M. Inkster.
Magdeleine de Vercheres Chapter of the Imperial Order Daughters of the Empire.	Ottawa, Ont	May 11..	Mrs. M. L. C. Casgrain (Regent).	Mrs. C. Eliot.
La Verandrye Chapter of the Imperial Order Daughters of the Empire.	Dauphin, Man	May 2..	Mrs. D. Gofton (Regent).	Mrs. G. Walker.
United Empire Loyalist Chapter of the Imperial Order Daughters of the Empire.	Napanne, Ont .	May 13.	Mrs. A. Harshaw (Regent).	Mrs. D Robinson.
Ladysmith Chapter of the Imperial Order Daughters of the Empire.	Ladysmith, Ont ..	May 13.	Mrs. W. Akenhead (Regent).	Mrs. W. Cooil.
Mons Chapter of the Imperial Order Daughters of the Empire.	Shoal Lake, Man..	May 10.	Mrs. Nicol (Regent)	Miss K. Grieve.
Seaford Chapter of the Imperial Order Daughters of the Empire.	Chilliwack, B.C	May 11.	Mrs. E. Lose (Regent).	Mrs. B. Porter.
Hamilton Municipal Chapter of the Imperial Order Daughters of the Empire.	Hamilton, Ont....	May 11.	Mrs. P. Crerar (Regent).	Mrs. S. Rhodes.
Donald Hankey Chapter of the Imperial Order Daughters of the Empire.	Grand Forks, B.C..	May 11.	Miss M. Kerman (Regent).	Miss J. Barla.
Peter Robinson Chapter of the Imperial Order Daughters of the Empire.	Peterboro, Ont...	May 13.	Miss K. Read Regent).	Miss R. Cummings.
Guy Drummond Chapter of the Imperial Order Daughters of the Empire...	Montreal, Que.. .	May 14.	Mrs. H. Joyce (Regent).	Mrs. F. Enwright.
Dollard Chapter of the Imperial Order Daughters of the Empire.	Montreal, Que...	May 14.	Mrs. Chas. Sprague (Regent).	Mrs. B. Clergue.
Private Wallace McNally Chapter of the Imperial Order Daughters of the Empire.	McAuley, Manitoba.	May 8	Miss Dot Wright (Regent).	Miss M. Lee.
Cobourg Primary Chapter Imperial Order Daughters of the Empire.	Cobourg, Ont .	May 8	Miss M. F. W. Eyre (Regent).	Miss H. Reynar.
Almonte Chapter of the Imperial Order Daughters of the Empire.	Almonte, Ont. .	May 8 .	Mrs. J. D. Taylor (Regent).	Miss H. I. Miller.
Tecumseh Chapter of the Imperial Order Daughters of the Empire.	Watford, Ont.	May 9..	Mrs. W. F. Fitzgerald (Regent).	Miss N. Roy.
Havelock Chatper of the Imperial Order Daughters of the Empire.	Woodstock, Ont	May 9	Mrs. H. Francis (Regent).	Mrs. N. Nesbitt.
Grande Forkes Chapter of the Imperial Order Daughters of the Empire.	Grande Forkes, B.C.	May 9 .	Mrs. M. Munroe (Regent).	Mrs. J. Davis.
Algonquin Rifles Chapter of the Imperial Order Daughters of the Empire.	Thessalon, Ont. .	May 9 .	Mrs. M. F. Bridge (Regent).	Miss J. Clements.
Royal Standard Chapter of the Imperial Order Daughters of the Empire.	St. John, N.B. .	May 9 .	Mrs. E. Smith (Regent).	Mrs. F. Knowlton.
Brock Centennial Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man..	May 9..	Mrs. W. D. McPherson (Regent).	Mrs. M. Hodgins.
Comber Chapter of the Imperial Order Daughters of the Empire.	Comber, Ont.	May 7 .	Mrs. F. Robertson (Regent).	Mrs. R. A. Smith.
DeWinton Chapter of the Imperial Order Daughters of the Empire.	Carberry, Man.. .	May 8 .	Mrs. S. W. Taylor (Regent).	Mrs. G. S. Haslam.
Sir Erie Geddes Chapter of the Imperial Order Daughters of the Empire.	Windsor, Ont. ..	May 8.. ..	Miss R. Mason (Regent).	Mrs. J. Wilson.
Port Stanley Chapter of the Imperial Order Daughters of the Empire.	Port Stanley, Ont	May 8.	Mrs. E. Cromwell (Regent).	Mrs. G. Smith.
H.M.S. Temeraire Chapter of the Imperial Order Daughters of the Empire.	Halifax, N.S....	May 6..	Miss M. Moulton (Regent).	Miss M. Moir.
King George V Chapter of the Imperial Order Daughters of the Emoire	Sherbrooke, Que.	May 8..	Mrs. W. S. Allan (Regent).	Mrs. Geo. C. Hall.

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List of War Charity Societies Registered during Fiscal Year.—*Continued.*

Name.	Head Office.	Date.	President or Regent.	Secretary.
Fort Malden Chapter of the Imperial Order Daughters of the Empire.	Amherstburg, Ont	May 13	Mrs. M. Bailey (Regent).	Mrs. E. C. Callam.
Lady Drummond Chapter of the Imperial Order Daughters of the Empire.	Sperling, Manitoba	May 13	Miss G. Millichamp (Regent).	Miss E. G. Whitmore.
John William McDonald Chapter of the Imperial Order Daughters of the Empire.	Stratford, Ont	May 13	Mrs. T. Brown (Regent).	Miss O. Money.
Kuskanook Chapter of the Imperial Order Daughters of the Empire.	Cranbrook, B.C.	May 13.	Mrs. A. MacKinnon (Regent).	Mrs. D. E. Worden.
Jon Sigurdsson Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man.	May 13.	Mrs. J. Skoptason (Regent).	Miss A. Vopni.
Admiral David Beatty Chapter of the Imperial Order Daughters of the Empire.	Nanton, Alta.	May 11.	Mrs. J. S. Sanson (Regent).	Mrs. W. Ings.
Agnes Deans Cameron Chapter of the Imperial Order Daughters of the Empire.	Victoria, B.C...	May 13 ...	Mrs. D. Miller (Regent)'	Miss A. B. Cooke.
Massie Chapter of the Imperial Order Daughters of the Empire.	Milverton, Ont	May 13	Mrs. W. Lindsay (Regent).	Miss M. Lindsay.
7th Regiment Fusiliers Chapter of the Imperial Order Daughters of the Empire.	London, Ont.	May 10.	Mrs. T. J. Murphy (Regent).	Mrs. C. Fraser.
John Stewart Chapter of the Imperial Order Daughters of the Empire.	Halifax, N.S.	May 13.	Mrs. W. Forrest (Regent).	Mrs. J. Baker.
Rose, Thistle and Shamrock Chapter of the Imperial Order Daughters of the Empire.	St. Catharines, Ont.	May 11.	Mrs. Malcolmson (Regent).	Mrs. D. Vincent.
Kitson Chapter of the Imperial Order Daughters of the Empire.	Macdonald, Man.	May 13.	Mrs. H. Bailey (Regent).	Miss J. Rodgers.
57th Regiment Chapter of the Imperial Order Daughters of the Empire.	Peterborough, Ont.	May 2..	Mrs. J. Eastwood (Regent).	Mrs. C. Jamieson.
Admiral Jellicoe Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C	May 13....	Mrs. C. Fitz-Gibbon (Regent).	Mrs. L. M. Disher
Navy League Chapter of the Imperial Order Daughters of the Empire.	Victoria, B.C.	May 12	Mrs. D. Doig (Regent).	Mrs. J. Thaw.
Prince Rupert Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man.	May 13	Miss B. Gunne (Regent).	Miss M. MacDougall.
Canadian Convalescent Home for Officers in France.	Toronto, Ont.	May 2 .	Mrs. J. F. Ross	Mrs. G. H. Burnham.
Fort William Teachers Patriotic Association.	Fort William, Ont	May 10	Miss M. E. Smith	Miss C. C. Grant.
Jewish War Sufferers Association of London.	London, Ont	May 10	J. Wolf	M. Hornstein.
Sir George Ross Chapter of the Imperial Order Daughters of the Empire.	London, Ont	May 13	Miss M. Granger (Regent).	Miss G. Screaton.
Cayton Chapter of the Imperial Order Daughters of the Empire	Hamilton, Ont.	May 13.	Mrs. W. R. Dunn (Regent).	Mrs. E. G. Reinke.
Avonton Chapter of the Imperial Order Daughters of the Empire.	Downie, Ont.	May 13	Mrs. R. Balkantyne (Regent).	Mrs. D. Neill.
La Salle Chapter of the Imperial Order Daughters of the Empire.	Kingston, Ont.	May 6 .	Mrs. H. Moores (Regent).	Miss A. M. Gibson.
Lord Tennyson Chapter of the Imperial Order Daughters of the Empire.	St Catharines, Ont	May 13	Mrs. A M Stobie. (Regent).	Mrs. R. J. Hawthorne.
Lincoln Military Chapter of the Imperial Order Daughters of the Empire.	St. Catharines, Ont.	May 13	Mrs G. Thairs (Regent).	Mrs. A. Dyke.
Captain Fryatt Chapter of the Imperial Order Daughters of the Empire.	Montreal, Que.	May 13.	Mrs. de Jersey White (Regent).	Mrs. A. Cross.
Lord Selkirk Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man.	May 13	Miss M. Galbraith (Regent).	Mrs. R. E. Gordon.
Gertrude Billyard Chapter of the Imperial Order Daughters of the Empire.	Young, Sask.	May 13	Mrs. W. B. Hartie	Mrs. K. Stableford
Poonahmalee Chapter of the Imperial Order Daughters of the Empire.	Smith Falls, Ont	May 11	Mrs. C O'Reilly (Regent).	Miss A. Keith.
Provincial Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man.	May 11.	Mrs. C. H. Campbell (Regent).	Mrs G. Hughes.
Medicine Hat Chapter of the Imperial Order Daughters of the Empire.	Medicine Hat, Alta	May 11.	Mrs. J. A. Carbert (Regent).	Mrs. O. Boyd.
Colonel Arthur Williams Chapter of the Imperial Order Daughters of the Empire.	Port Hope, Ont.	May 11	Mrs. H. A Mulholland	Miss E. M. White.
Prince Alexander of Teck Chapter of the Imperial Order Daughters of the Empire.	Brandon, Man...	May 11	Mrs. J H McGregor (Regent).	Miss M. Mitchell.
St Catharines Municipal Chapter of the Imperial Order Daughters of the Empire.	St. Catharines, Ont	May 11	Mrs. J S. Campbell (Regent).	Mrs. E. Jenckes.
St. Catharines Chapter of the Imperial Order Daughters of the Empire.	St.Catharines, Ont.	May 11.	Mrs. M. Mullock (Regent).	Mrs. C. Jagger.
Chrysler Chapter of the Imperial Order Daughters of the Empire.	Vernon, B.C..	May 11	Mrs. I. Kent (Regent).	Mrs. A. E. Kidston.
"J" Unit Chapter of the Imperial Order Daughters of the Empire.	Victoria, B.C.	May 11	Mrs. H. North (Regent).	Miss F. Alexander.

LIST of War Charity Societies Registered during Fiscal Year.—*Continued.*

Name.	Head Office.	Date.	President or (Regent.	Secretary.
Henry Morgan Chapter, Junior of the Imperial Order Daughters of the Empire	Shoal Lake, Man.	May 11.	Miss R. Morgan (Regent).	Miss L. Wherrett.
Kingston Municipal Chapter of the Imperial Order Daughters of the Empire.	Kingston, Ont.	May 11.	Mrs. J. Carruthers (Regent).	Mrs. S. C. Calvin.
Peace River Chapter of the Imperial Order Daughters of the Empire.	Peace River, Alta.	May 10.	Mrs. D. Grimshaw. (Regent).	Mrs. A. E. Carlisle.
Elgin Humane Society	St. Thomas, Ont.	May 8.	C. W. Marlatt.	Mrs. A. C. Gray.
Rear Admiral Sir Christopher Graddock Chapter of the Imperial Order Daughters of the Empire.	Red Deer, Alta.	May 9.	Mrs. M. B. Carscallia (Regent).	Mrs. A. Greig.
Victory Chapter of the Imperial Order Daughters of the Empire.	Kingston, Ont.	May 11.	Miss L. Kilborn (Regent).	Miss L. Waddell.
General Leckie Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C.	May 11.	Mrs. A. Graveley (Regent).	Mrs. A. C. Marpole.
St. Hilda Chapter of the Imperial Order Daughters of the Empire.	Hamilton, Ont.	May 8.	Miss E. Moore (Regent).	Miss R. Jamieson.
Walkerton Chapter of the Imperial Order Daughters of the Empire.	Walkerton, Ont.	May 11.	Mrs. E. Wiser. (Regent).	Miss E. Truax.
Dickenson Chapter of the Imperial Order Daughters of the Empire.	Dickinson's Landing, Ont.	May 11.	Mrs. H. Ransom (Regent).	Miss E. Bullock.
Kipling Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man.	May 10.	Mrs. D. Hislop (Regent).	Miss R. Donaldson.
Westmount Soldiers Wives League.	Westmount, Que.	May 6.	Mrs. W. Rutherford	Mrs. T. G. Stewart.
Prairie Gateway Chapter of the Imperial Order Daughters of the Empire.	Portage la Prairie, Man.	May 7.	Mrs. H. Stepheas (Regent).	T. J. Hall.
Catherine Hamilton Chapter of the Imperial Order Daughters of the Empire.	St. Catharines, Ont.	May 10.	Miss E. Smith (Regent.)	Miss V. Voisard.
Annandale Chapter of the Imperial Order Daughters of the Empire.	Kingston, Ont.	May 8.	Mrs. J. Carruthers	Miss A. M. Daly.
Fort Aaa Chapter of the Imperial Order Daughters of the Empire.	Annapolis Royal, N.S.	May 14.	Mrs. D. Owen	Miss M. King.
Sir John Sherbrooke Chapter of the Imperial Order Daughters of the Empire.	Sherbrooke, Que.	May 15.	Mrs. M. R. McLeod	Miss J. R. McLeod.
Women's Patriotic League of Swansea.	Swansea, Ont.	May 14.	Mrs. C. Luao	Miss C. Smyth.
Gallipoli Chapter of the Imperial Order Daughters of the Empire.	Vernoa, B.C.	May 15.	Mrs. C. M. Watson	Miss H. Giles.
Westward Ho! Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta.	May 15.	Mrs. E. Higiabotham	Mrs. C. Pardee.
Delta Women's Patriotic Society.	Ladner, B.C.	May 16.	Miss A. S. Wilson	Mrs. L. McKee.
Lieut. Warneford Chapter of the Imperia Order Daughters of the Empire.	Birtle, Man.	May 17.	Miss M. Smith	Mrs. Roseborough.
75 Overseas Battalion Women's Club.	Toronto, Ont.	May 15.	Miss J. E. Keith	Mrs. L. Langstaff.
National Council of the Y. M. C. A. of Canada.	Toronto, Ont.	May 17.	G. H. Wood	John Brown, Jr.
Major Walsh Chapter of the Imperial Order Daughters of the Empire.	Maple Creek, Sask.	May 18.	Mrs. A. Burnett	Mrs. E. Fearoa.
Sir John Franklin Chapter of the Imperial Order Daughters of the Empire.	The Pas, Man.	May 18.	Mrs. G. Bancroft	Mrs. W. Russell.
Military Chapter of Calgary of the Imperial Order Daughters of the Empire	Calgary, Alta.	May 17.	Mrs. G. MacDonald	Miss E. Egbert.
Indian Head Chapter of the Imperial Order Daughters of the Empire.	Indian Head, Sask.	May 18.	Miss E. Gordon	Mrs. H. G. Wilson.
Coleraine Chapter of the Imperial Order Daughters of the Empire.	Picton, N.S.	May 17.	Mrs. J. Yorston	Mrs. A. D. Patterson.
Veterans Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man.	May 17.	Miss M. Johnston	Miss J. F. Brown.
Dufferin Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C.	May 17.	Mrs. A. Enthoven	Miss F. Phain.
Col. McLeod Chapter of the Imperial Order Daughters of the Empire.	Calgary, Alta.	May 17.	Mrs. S. Melvia	Mrs. I. H. McLean.
Royal Grenadiers Chapter of the Imperial Order Daughters of the Empire.	Toronto, Ont.	May 17.	Mrs. J. C. Mason	Mrs. G. Douglas.
Bishop Cridge Ministering Chapter of the Imperial Order Daughters of the Empire.	Victoria, B.C.	May 17.	Mrs. H. Lanady	Miss M. Cridge.
Loyalist Chapter of the Imperial Order Daughters of the Empire.	St. John, N.B.	May 16.	Mrs. H. McKay	Mrs. M. F. White.
East Kootenay Chapter of the Imperial Order Daughters of the Empire.	Waldo, B.C.	May 16.	Mrs. V. S. Ross	Miss E. M. Adolph.
La Have Chapter of the Imperial Order Daughters of the Empire.	Bridgewater, N.S.	May 16.	Mrs. K. Olive	Mrs. F. H. Starr.
Municipal Chapter of the Imperial Order Daughters of the Empire of Halifax.	Halifax, N.S.	May 14.	Mrs. F. H. Sexton	Miss G. Faulkner.
Drummond Chapter of the Imperial Order Daughters of the Empire.	Melfort, Sask.	May 16.	Mrs. A. Graham	Miss E. Hawke.
Admiral Hood Chapter of the Imperial Order Daughters of the Empire.	Toronto, Ont.	May 16.	Mrs. A. Means	Miss E. Trotter.
Sturgeon Creek Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Manitoba	May 16.	Mrs. A. S. Brown	Miss M. Stutter.
Major Bishop, V.C, D.S.O., M.C., Chapter of the Imperial Order Daughters of the Empire.	Westmount, Que.	May 13.	Mrs. J. McGill	Mrs. W. Winter.

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List of War Charity Societies Registered during Fiscal Year.—*Continued.*

Name.	Head Office.	Date.	President or Regent.	Secretary.
Lady Franklin Chapter of the Imperial Order Daughters of the Empire.	North Spring Island B.C.	May 15	Mrs. E. Halley.	Mrs. A. Young.
Captain Huntley MacKay Chapter of the Imperial Order Daughters of the Empire.	Powassan, Ont.	May 15.	Mrs. M. Perkins.	Miss. S. McCaughey.
Pro Patria Chapter of the Imperial Order Daughters of the Empire.	Sarnia, Ont	May 15	Miss W. Gorman.	Miss H. Taylor.
George T. Richardson Chapter of the Imperial Order Daughters of the Empire.	Kingston, Ont.	May 15	Mrs. E. Sutherlund.	Miss P. Gimblett.
Admiral Collingwood Chapter of the Imperial Order Daughters of the Empire.	Collingwood, Ont	May 20.	Mrs. C. W. Knight.	Mrs. F. Bryan.
Kitchener Chapter of the Imperial Order Daughters of the Empire.	Montreal, Que.	May 20	Mrs. R. Kerry.	Mrs. A. H. Holland.
Dick Gordon Hughes Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man	May 22	Mrs. E. Spencer.	Mrs. G. Tompte.
Earl Derby Chapter of the Imperial Order Daughters of the Empire.	Kinistino, Sask	May 22	Mrs. M. Atkinson	Mrs. V. M. Whelan.
London Local Branch of the National Council of Women.	London, Ont.	May 22.	Mrs. H. Boomer.	Mrs. J. C. Yarker.
Oakville Women's Patriotic League	Oakville, Ont.	May 21.	Mrs. J Cavers.	Mrs. B. S. Andrew.
Manitowaning Women's Patriotic League.	Manitowaning, Ont.	May 23.	Mrs. K. Shaw.	Mrs. S. I. Neilson.
Canadian Serbian Relief Committee.	Toronto, Ont.	May 22.	Sir Robert Falconer.	L. Carlisle.
Lord Roberts Chapter of the Imperial Order Daughters of the Empire.	London, Ont	May 22.	Mrs. E. Smith	Mrs. N. McKillop.
Foothills Chapter of the Imperial Order Daughters of the Empire.	Claresholm, Alta.	May 23.	Mrs. O. Reincke.	Mrs. J. Watt.
Governor Simcoe Chapter of the Imperial Order Daughters of the Empire.	Trenton, Ont.	May 23.	Mrs. G. A. White	Mrs. R. L. Haines.
York Chapter of the Imperial Order Daughters of the Empire.	Toronto, Ont.	May 17.	Mrs C. Rudge.	Mrs. E. Hill.
Valcartier Camp Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C.	May 18.	Mrs. W. Griffin.	Mrs. E. S. Chambers.
Municipal Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C.	May 18.	Mrs H. Drummond.	Mrs. A. Coburn.
Sir John Carling Chapter of the Imperial Order Daughters of the Empire.	London, Ont.	May 17.	Miss C. Weld	Miss A. McPhillips.
Jack Wells Chapter of the Imperial Order Daughters of the Empire.	Dresden, Ont.	May 20.	Miss M. Humphrey.	Miss L. Fox.
Col. Kerby Chapter, Bridgeburg and Fort Erie, of the Imperial Order Daughters of the Empire.	Bridgeburg, Que	May 20.	Mrs. C. Hanna.	Mrs. C. H. Price.
Baden-Powell Chapter of the Imperial Order Daughters of the Empire.	Quebec, Que.	May 20.	Miss Gibaut.	Miss M. M. McNaughton.
Great War Next-of-Kin Association	Macleod, Alta.	May 16.	Mrs. M. Edgar.	Miss I. Baker.
Eccles Hill Chapter of the Imperial Order Daughters of the Empire.	Cowansville, Que.	May 20.	Miss M. Nesbitt.	Mrs. H. Drake.
Alexander Selkirk Chapter of the Imperial Order Daughters of the Empire.	Weyburn, Sask.	May 20.	Mrs. C. Raven.	Miss M Shortill.
Silver Heights Chapter of the Imperial Order Daughters of the Empire.	St. James, Man	May 21.	Mrs. S. Massey.	Mrs. M. Thompson.
Royal Scots Chapter of the Imperial Order Daughters of the Empire.	Calgary, Alta.	May 22	Mrs. M. Drummond	Mrs. H. Edwards.
Lieut. Stanley Mitchell Chapter of the Imperial Order Daughters of the Empire.	Norwood, Man	May 22.	Mrs. LePage.	Mrs. C. Stewart.
Earl Grey Chapter of the Imperial Order Daughters of the Empire.	Owen Sound, Ont	May 23.	Mrs. A. B. Hay.	Mrs. G. Zapfe.
Central Auxiliary for War Relief Work.	Winnipeg, Man.	May 21.	Mrs. R. Rodgers.	Mrs. B. McLean.
Dr. Robertson Chapter of the Imperial Order Daughters of the Empire.	Saskatoon, Sask	May 22.	Miss D. Hamilton	Miss G. Spicer.
Lord Dorchester Chapter of the Imperial Order Daughters of the Empire.	Dorchester, N.B.	May 21.	Mrs. A. B. Pipes	Mrs. J. White.
Thorold Chapter of the Imperial Order Daughters of the Empire.	Thorold, Ont	May 22.	Mrs. C. Brockbank	Miss L. Granville.
Tan-nis-uk Chapter of the Imperial Order Daughters of the Empire.	Calgary, Alta.	May 23.	Mrs. M. Spence.	Miss C. Dingman.
Max Kennedy Horton Chapter of the Imperial Order Daughters of the Empire.	Saltcoats, Sask.	May 23.	Mrs. C. Rodgers.	Miss L. McLauchlia.
Lady Douglas Chapter of the Imperial Order Daughters of the Empire.	Victoria, B.C.	May 23.	Mrs. M. McMicking.	Mrs. H. Williams.
Connaught Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C.	May 23.	Mrs. D. Marshall	Mrs. E. Monro.
Governor Laird Chapter of the Imperial Order Daughters of the Empire.	North Battleford, Sask.	May 23.	Mrs. J. Colborne.	Mrs. Douglas-Fraser.
Gonzales Chapter of the Imperial Order Daughters of the Empire.	Victoria, B.C.	May 23.	Mrs. C. Sampson.	Mrs. A. Fraser.
Royal Edward Chapter of the Imperial Order Daughters of the Empire.	Charlottetown, P.E.I.	May 23.	Mrs. G. Hogson.	Miss E. Haviland.
Margaret Gage Burkholder Chapter of the Imperial Order Daughters of the Empire.	Hamilton, Ont.	May 25	Mrs. D. White.	Miss E. M. Thompson.

LIST of War Charity Societies Registered during Fiscal Year.—*Continued.*

Name.	Head Office.	Date.	President or Regent.	Secretary.
Paardeburg Chapter of the Imperial Order Daughters of the Empire.	Hamilton, Ont.	May 25	Mrs. H. Griffin	Mrs. J. McLaren.
Perth-upon-Tay Chapter of the Imperial Order Daughters of the Empire.	Perth, Ont ..	May 21	Mrs. J. Stewart	Mrs. C. Armstrong.
Hugh Niven Chapter of the Imperial Order Daughters of the Empire.	London, Ont	May 23	Mrs. E. Nichols. .	Mrs. W. Martin.
Our Heroes Chapter of the Imperial Order Daughters of the Empire.	Chilliwack, B.C..	May 23	Mrs. M Davies.	Mrs. H. Fox.
Light Infantry Chapter of the Imperial Order Daughters of the Empire.	South Wellington, B.C.	May 23.	Mrs. P. Brodie...	Miss F. T. Down.
Kokanee Chapter of the Imperial Order Daughters of the Empire.	Nelson, B.C	May 23..	Mrs. A. McCulloch. .	Mrs. A. Pickford.
Jubilee Chapter of the Imperial Order Daughters of the Empire.	Grand Prairie, Alta.	May 23	Mrs. E. Bradford	Mrs. L. C. Porteous.
Jack Cornwell Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man	May 23	Mrs. R. Shaw. .	Mrs. K. Richardson.
Lord Reading Chapter of the Imperial Order Daughters of the Empire.	Quebec, Que .	May 23.	Miss R. Smilovitz	Miss F. Lazarovitch.
Soldiers Comforts Club of Windsor.	Windsor, Ont.	June 1. .	Miss G. Kerr	Miss M Burchell.
66th Battalion Chapter of the Imperial Order Daughters of the Empire.	Lake Saskatoon, Sask.	June 1. .	Mrs. W. Pearcy	Mrs. L. McDonald.
220th Battalion Women's Auxiliary .	Toronto, Ont. ..	June 1. . .	Mrs. L. Brown. ..	Miss J. Plaskett.
North Toronto Women's Patriotic League	Toronto, Ont...	May 31	Mrs. F. Firstbrook. .	Mrs. K James.
Women's War Relief Club.	Buckingham, Que.	May 31. ..	Mrs. J. McLaren .	Mrs. J. Bryant.
Patriotic League of Florence.	Florence, Ont.	May 29.	Mrs. F. Jones .	Mrs. J. Beatty.
Women's Canadian Club of Vancouver .	Vancouver, B.C. .	May 29	Mrs. E. Scott . .	Mrs. C. Dickson.
Allies Chapter of the Imperial Order Daughters of the Empire.	Sidney, B.C	May 30	Miss L. Lowndes	Miss J. Wilkinson.
Khaki League	Montreal, Que. . .	May 29	G. Benson . . .	R. T. Heneker.
Whitby War Relief Society . ..	Whitby, Ont. .	May 25	Mrs. J. Willis	Mrs B. King.
Municipal Chapter of Sherbrooke of the Imperial Order Daughters of the Empire.	Sherbrooke, Que .	May 29	Mrs. H. Fraser .	Miss F. Purdy.
Queen Elizabeth of Belgium Chapter of the Imperial Order Daughters of the Empire.	Montreal, Que.. .	May 29	Miss M. Hart	Miss G. Cassils.
Queen Mary Tea Room of the Fort Cumberland Chapter of the Imperial Order Daughters of the Empire.	Moncton, N B	May 29	Miss E. Chandler .	Mrs. C. Purdy.
120th City of Hamilton Battalion C.E.F. Women's Auxiliary.	Hamilton, Ont.	May 25 .	Mrs. A. Irwin. .	Miss J. Dixon.
Monday Club of Oakville	Oakville, Ont. .	May 28	Mrs. C. Williams. .	Mrs. L. Cote.
High Park Overseas Club	Toronto, Ont. .	May 25	Mrs. E. Ruse. .	Mrs. E. Galvin.
St. Cecilia Chapter of the Imperial Order Daughters of the Empire.	Hamilton, Ont. .	June 2. .	Mrs. H. Burkholder. .	Miss M. Edwards
Wilfred Fitzpatrick Chapter of the Imperial Order Daughters of the Empire.	Estevan, Sask .	une 1. . .	Mrs. E. Pierce .	Mrs. J. Cavers.
Robert Louis Stevenson Chapter of the Imperial Order Daughters of the Empire.	Montreal, Que. .	June 1. .	Mrs. B. Robinson.	Mrs. H. Davis.
Local Council of Women of Brandon. ...	Brandon, Man. .	May 30	Mrs. S. Clements	Mrs. A. Hatcher.
Mount Rundle Chapter of the Imperial Order Daughters of the Empire.	Banff, Alta	May 31	Mrs. E. Duke	Mrs. W. Jackson.
Lt.-Col. Winsley Chapter of the Imperial Order Daughters of the Empire. B.C	New Westminster,	May 31	Miss L. Gray	Mrs. O. Philpot.
General Allenby Chapter of the Imperial Order Daughters of the Empire.	Hamilton, Ont. .	May 31	Mrs. J Kennedy	Mrs. L. Jones.
General Joffre Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta	May 29	Mrs. A Nash.	Mrs. C. L. Freeman.
Sir Howard Douglas Chapter of the Imperial Order Daughters of the Empire.	Fredericton, N B.	May 29	Mrs. W. Crocket..	Miss E. Stopford.
Lady French Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C...	May 27 .	Mrs. E. Ross. ..	Mrs. J. James.
Yukon Chapter of the Imperial Order. Daughters of the Empire.	Whitehorse, Y.T. .	May 25	Mrs. D. Taylor	Miss E. Teskey.
Englehart Chapter of the Imperial Order Daughters od the Empire.	Englehart, Ont... .	May 25	Mrs. M Skinner..	Mrs M. Kerrigan.
Queen Mary Chapter of the Imperial Order Daughters of the Empire.	Prince Rupert, B C.	May 25..	Miss F. Dawson..	Miss L. Murray.
Willows Camp Chapter of the Imperial Order Daughters of the Empire.	Victoria, B.C.	May 25	Mrs. E. Taylor..	Miss C. Balson.
Moira Chapter of the Imperial Order Daughters of the Empire.	Madoc, Ont. ...	May 25	Mrs. F. Harrison...	Miss J. McIntosh
Sanford Chapter of the Imperial Order Daughters of the Empire.	Fleming, Sask ..	May 25	Mrs. B. Robinson	Mrs. E. Milne
Emily C. Wilson Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta .	May 25	Mrs. F. Osborne	Miss B. Batrick.
Sir John French Chapter of the Imperial Order Daughters of the Empire.	Stratford, Ont. .	May 25	Mrs. T. Parker..	Miss M. Erb.
Women's Patriotic Association	Port Perry, Ont...	May 20	Mrs. Z. Jackson .	Mrs. E. Harris.
Gen. Byng Chapter of the Imperial Order Daughters of the Empire	Medicine Hat, Alta	May 18	Miss J. Fraser..	Miss G. Cousins.
British Navy Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta	June 6	Mrs. G. McKee	Mrs. K. Wilson.

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List of War Charity Societies Registered during Fiscal Year.—*Continued.*

Name.	Head Office.	Date.	President or Regent.	Secretary.
Col. Mart McHarg Chapter of the Imperial Order Daughters of the Empire.	McKay, B.C..	June 6	Mrs. H. Fraser	Mrs. J. Murray.
Queen Victoria Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man.....	June 6.	Mrs. K. Warner	Mrs. S. Kelsey.
Military Chapter of the Imperial Order Daughters of the Empire.	Saskatoon, Sask	June 6	Mrs. E. Hair.	Mrs. M Lovelock.
Local Council of Women, Lethbridge	Lethbridge, Alta..	June 6	Mrs. G. Robinson	Mrs. W. Leech.
Local Council of Women, New Westminster	New Westminster, B.C.	June 6	Mrs. G. Smith	Miss A. Wise.
104th Westminster Fusiliers Chapter of the Imperial Order Daughters of the Empire.	New Westminster, B.C.	June 7	Mrs. G. Coulthard.	Miss P. Coulthard.
St. Julien Surgical Club	Vancouver, B.C.	June 8	Mrs. H. Baillie..	Miss F. Gow.
Rockford Patriotic Circle	Owen Sound, Ont	June 8	Mrs. Gillesby	Mrs. B. Petty.
Major Farr Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta	June 8	Miss A. Purvis	Mrs. F. Mercer.
Keomi Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta...	June 10	Miss Maddock	Miss H. McDonald.
Hope Soldiers Comforts Club..	Hope, B.C.	June 6	Mrs. E. Sanderson	Mrs. H. L. Robinson.
Lieut. Weir Chapter of the Imperial Order Daughters of the Empire.	Medicine Hat, Alta..	June 6	Miss L. Holmes..	Miss I. Worth
Owen Sound Women's Patriotic League	Owen Sound, Ont	June 4	Mrs. M. Parker....	Mrs. M. Holmes
Alexander Beaudrew Chapter of the Imperial Order Daughters of the Empire	Caron, Sask.	June 6	Mrs. W. Miller	Mrs. J. McGrattan.
Batoche Chapter of the Imperial Order Daughters of the Empire.	Rosethern, Sask	June 6	Mrs. M. Bashford	Mrs. W. Talmey.
Portage Plains Chapter of the Imperial Order Daughters of the Empire.	Portage la Prairie, Man.	June 5	Mrs. J. Smith..	Mrs. R. Brydon.
Soldier's Memorial Chapter of the Imperial Order Daughters of the Empire	Winnipeg, Man.	June 7	Mrs. E. Volume	Miss B. McGillivray.
Red River Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man...	June 7.	Mrs. J. Curley....	Mrs. A. Warner
No. 16 Sydenham Willing Workers..	Owen Sound, Ont...	June 8	Mrs. L. Boyd	Mrs. J. S. Kemp.
Catholic Womens Guild of Hamilton	Hamilton, Ont.	June 4...	Miss R. Smith.	Miss F. Barker.
Oakville Red Cross Society..	Oakville, Ont.....	June 8	Mrs. Inglehart	Miss L. Wright-Orr.
Christian Men's Federation of Canada	Taronto, Ont..	June 8	J. G. Shearer, M.D...	T. Howell.
Women's General Patriotic League of Moncton Suburbs.	Moncton, N.B...	June 10	Mrs. M Lodge	Miss A. Lea.
Major Latta Chapter of the Imperial Order Daughters of the Empire.	New Westminster, B.C.	June 11	Miss B. Sayer..	Miss D. Sweneisky.
General Maude Chapter of the Imperial Order Daughters of the Empire.	Elmvale, Ont.	June 11.	Miss A. Burton..	Miss P. Usher.
Nicholas Wilson Chapter of the Imperial Order Daughters of the Empire.	London, Ont...	June 11	Mrs. E. Braithwaite	Mrs. C. Bluett.
Admiral Sturdee Chapter of the Imperial Order Daughters of the Empire.	Weyburn, Sask..	June 12	Mrs. J. Sherrick..	Mrs. F. Zabel.
Margaret McDonald Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta	June 13	Mrs. Fargnharson.	Mrs. J. L. Cooke.
Brandon Chapter of the Imperial Order Daughters of the Empire.	Brandon, Man.....	May 13	Mrs. R. MacDonnell	Mrs. R Smith.
Provincial Chapter of the Imperial Order Daughters of the Empire.	Regina, Sask..	June 13	Mrs. W. Martin	Miss I. Moore.
Sir Richard Grenville Chapter of the Imperial Order Daughters of the Empire.	Calgary, Alta.	June 13.	Mrs. F. McNaughton..	Mrs. C. Betts.
Queen's Own Rifles Chapter of the Imperial Order Daughters of the Empire.	ronto, Ont	June 13	Mrs. C. Royce.	Miss L. Wheeler.
Edmonton Municipal Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta	June 13.	Mrs. F. Smith	Mrs. S. Field.
General Wolfe Chapter of the Imperial Order Daughters of the Empire.	Harriston, Ont..	June 13	Mrs. O. Meiklejohn.	Mrs. Charlesworth.
Temiskaming Local Council of Women	New Liskeard, Ont	June 14	Miss E. Taylor..	Mrs. F. L. Hutchinson.
Abegweit Chapter of the Imperial Order Daughters of the Empire.	Summerside, P.E.I	June 14	Mrs. N. McLeod,	Mrs. L. Moore.
Hill 60 Chapter of the Imperial Order Daughters of the Empire.	Prince Rupert, B.C	June 13	Miss B. McLeod	Mrs. J. McMaster.
Wetaskiwin Branch of the National Council of Women.	Wetaskiwin, Alta	June 13	Mrs. M. Nelson	Mrs. J. Poole.
Camosun Chapter of the Imperial Order Daughters of the Empire	Victoria, B.C.	June 13	Mrs. K. Agnew	Mrs. H. Marshaw.
Local Council of Women, Peterboro	Peterboro, Ont.	June 5	Mrs. R. Harstone	Mrs. C. Jamieson.
Alexander Gault Chapter of the Imperial Order Daughters of the Empire.	Lethbridge, Alta...	June 4	Mrs. Ritchie	Mrs. A. Lundy.
Lt.-Col. Sisson's Chapter of the Imperial Order Daughters of the Empire.	Medecine Hat, Alta.	June 4	Miss G Taylor	Miss M. Smith.
Argyll Chapter of the Imperial Order Daughters of the Empire.	Belleville, Ont.	June 4	Mrs. G. Wallbridge...	Mrs. R. Chadwick.
CoronationChapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C..	June 1	Mrs. F. de Pineier..	Miss McWright.
Picardy Chapter of the Imperial Order Daughters of the Empire.	Frederieton, N.B...	June 11	Miss M. McKee.	Miss A. Kelly.
Seaforth Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C..	June 1	Mrs. C. Fowler	Mrs. B. Faulkner

List of War Charity Societies Registered during Fiscal Year.—*Continued.*

Name.	Head Office.	Date.	President or Regent.	Secretary.
Lady Maitland Chapter of the Imperial Order Daughters of the Empire.	Victoria Harbour, Ont.	June 1	Miss B. Winfield	Miss M. Smyth.
Widows' Wives and Mothers of Great Britain's Heroes Association.	Vancouver, B.C.	June 1	Mrs. J. Kemp	Mrs. J. Robertson.
Col. Wyndham Chapter of the Imperial Order Daughters of the Empire.	Okotoos, Alta	July 5	Mrs. G. Gaskell	Mrs. L. Gough.
Margaret Polson Murray Chapter of the Imperial Order Daughters of the Empire.	Montreal, Que	May 30	Mrs. D. Anderson	Mrs. W. Northey.
Michael O'Leary Chapter of the Imperial Order Daughters of the Empire.	Wadena, Sask	May 31	Mrs. J. McPherson	Mrs. P. M. McNicol.
Havelock Branch of the Women's Patriotic League.	Havelock, Ont	May 29	Mrs. B. Holdcroft	Mrs. M. Denike.
Hastings Chapter of the Imperial Order Daughters of the Empire.	Hastings, Ont	June 7	Mrs. W. Wilson	Mrs. C. B. Plant.
Maple Leaf Chapter of the Imperial Order Daughters of the Empire.	Goderich, Ont	May 31	Mrs. M. Clifford	Miss D. Dickson.
Local Council of Women, Medicine Hat	Medicine Hat, Alta	May 30	Mrs. B. Bellaney	Mrs. J. Porter.
Victor Hatheway Chapter of the Imperial Order Daughters of the Empire.	Fredericton, N.B.	May 30	Miss I. Gibson	Miss K. McAdam.
Sir Howell Ap Tudor Chapter of the Imperial Order Daughters of the Empire.	Bangor, Sask	May 29	Mrs. L. Harvard	Mrs. A. Straker.
Markland Chapter of the Imperial Order Daughters of the Empire.	Yarmouth, N.S.	May 29	Mrs. G. Farish	Mrs. H. Cann.
Red Ensign Chapter of the Imperial Order Daughters of the Empire.	Colgate, Sask	May 30	Mrs. E. Fletcher	Mrs. L. Gullivan.
Jack Tar Chapter of the Imperial Order Daughters of the Empire.	New Westminster, B.C.	May 31	Miss E. Major	Miss J. McKenzie.
Carlyle Chapter of the Imperial Order Daughters of the Empire.	Lockwood, Sask	May 30	Mrs. S. Gardner	Mrs. J. Wallace.
St. Clair Stobart Chapter of the Imperial Order Daughters of the Empire.	Kamloops, B.C.	June 13	Mrs. W. Wyllie	Mrs. W. Phillip.
Canadian Grenadier Guards Association	Montreal, Que	June 8	Major H. Shaw	Capt. R. Tolmie.
Neepawa Soldiers Aid Society	Neepawa, Man	June 10	Mrs. J. Wemyss	Mrs. M. Wethey.
Central Council of the Girls Friendly Society in Canada.	Toronto, Ont	June 14	Mrs. T. Wood	Miss E. Campbell.
28th Regiment Chapter of the Imperial Order Daughters of the Empire.	Stratford, Ont	June 14	Mrs. J. McCrimmon	Mrs. J. Makins.
Last Mountain Chapter of the Imperial Order Daughters of the Empire.	Nokomis, Sask	June 13	Mrs. J. McBride	Miss P. Campbell.
Elizabeth Simcoe Chapter of the Imperial Order Daughters of the Empire.	Waubaushene, Ont	June 21	Miss E. Duncliffe	Miss V. Meneilly.
William Phillips Chapter of the Imperial Order Daughters of the Empire.	Montreal, Que	June 13	Miss E. Flanagan	Miss G. Stone.
New Westminster Municipal Chapter of the Imperial Order Daughters of the Empire.	New Westminster, B.C.	June 19	Madame Gauvreau	Mrs. J. Heaps.
Janet Carnachan Chapter of the Imperial Order Daughters of the Empire.	Toronto, Ont	June 17	Miss M. Hyndman	Miss M. Rob.
Queen Mary's Needlework Guild in Ontario.	Toronto, Ont	June 15	Mrs. G. VanKoughnet	Mrs. C. Ellis.
London Municipal Chapter of the Imperial Order Daughters of the Empire.	London, Ont	June 21	Mrs. J. Niven	Mrs. A. McLean.
War Relief for France	Winnipeg, Man	June 15	Mrs. E. Loucks	Mrs. F. Hartley.
Walkerton Soldiers Overseas Auxiliary.	Walkerton, Ont	June 23	Miss F. Rowlands	Miss D. Denton.
Courcelette Chapter of the Imperial Order Daughters of the Empire.	Dauphin, Man	June 19	Mrs. E. Widmeyer	Mrs. R. Wilson.
Great War Next-of-Kin Association of Lethbridge.	Lethbridge, Alta	June 21	Mrs. L. Barkley	Mrs. I. Bulpitt.
First Canadian Contingent Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta	June 25	Mrs. K. Hall	Miss G. Edminston.
Governor Parr Chapter of the Imperial Order Daughters of the Empire.	Parrsboro, N.S.	June 18	Mrs. J. Kirkpatrick	Mrs. E. McDade.
Ottawa Local Council of Women	Ottawa, Ont	June 17	Mrs. A. Short	Mrs. F. Wilson.
Kingston Local Council of Women	Kingston, Ont	June 15	Mrs. J. McGillivray	Miss I. C. Rowan.
Grey Patriotic Society	Owen Sound, Ont	June 15	Mrs. E. Barclay	Mrs. M. Campbell.
Governor Carleton No. 172 Chapter of the Imperial Order Daughters of the Empire.	Fredericton, N.B.	June 15	Mrs. E. Vanwart	Mrs. H. Robertson.
Thursday Club	Peterboro, Ont	June 15	Mrs. G. Cameron	Mrs. E. Wood.
Elmvale Women's Patriotic League	Elmvale, Ont	June 15	Mrs. J. McAuley	Mrs. G. Roe.
Donald McLean Chapter of the Imperial Order Daughters of the Empire.	Port Coquitlam, B.C.	June 17	Mrs. J. Kilmer	Mrs. G. Sutherland.
Jutland Chapter of the Imperial Order Daughters of the Empire.	Lockwood, Sask	May 19	Mrs. L. Smith	Mrs. A. Carswell.
Triple Entente Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C.	June 19	Mrs. G. McCrossan	Mrs. F. Brydon.
Bothwells Corners Patriotic Circle	Owen Sound, Ont	June 18	Mrs. C. Bothwell	Mrs. R. Walter.
Selkirk of Baldoon Chapter of the Imperial Order Daughters of the Empire.	Wallaceburg, Ont	June 21	Mrs. A. Carscallen	Mrs. C. Banghman.
Nipissing Chapter of the Imperial Order Daughters of the Empire.	Sudbury, Ont.	June 21	Mrs. W. Morrison	Mrs. C. Brunton.

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List of War Charity Societies Registered during Fiscal Year.—*Continued.*

Name.	Head Office.	Date.	President or Regent.	Secretary.
Lord Sackville Chapter of the Imperial Order Daughters of the Empire.	Sackville, N.B.	June 22	Mrs. F. Black	Mrs. Freeman-Lake.
Lady Scott Chapter of the Imperial Order Daughters of the Empire.	Westmount, Que.	June 23	Mrs. J. Munn	Mrs. J. Robertson.
Women's Auxiliary to the British Columbia Artillery men.	Vancouver, B.C.	June 23.	Mrs. D. McCauley	Mrs. V. Mansbridge.
Columbia Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C.	June 24	Mrs. C. Pennock	Miss W. Douglass.
Passchendale Chapter of the Imperial Order Daughters of the Empire.	Assiniboia, Sask	June 21.	Miss H. Beswethenk	Miss E. McCormick.
Ralph Smith Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C.	June 21	Mrs. Y. Murduff	Mrs. J. McKay.
Edwin Stanley Chapter of the Imperial Order Daughters of the Empire.	Westlock, Alta.	June 29.	Mrs. L. McEachern	Mrs. M. Duffenbaugh.
Fort Garry Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man.	June 13.	Mrs. G. McKay	Mrs. J. Davidson.
Local Council of Women of Trenton	Trenton, Ont.	May 28	Mrs. F. Farncourt	Miss G. Alford.
St. Elizabeth Chapter of the Imperial Order Daughters of the Empire.	Hamilton, Ont.	June 13.	Mrs. A. MacKay	Mrs. C. Ross.
Anagwakade Chapter of the Imperial Order Daughters of the Empire.	Fredericton, N.B.	June 26	Miss R. Barry	Miss L. Hodge.
Elora Junior Patriotic League	Elora, Ont.	June 11.	Miss K. Archibald.	Miss H. Godfrey.
Canadian Aviation Aid Club	Toronto, Ont	June 26.	Mrs. M. Strathy	Mrs. M. Pepler.
Golden West Chapter of the Imperial Order Daughters of the Empire.	Saskatoon, Sask	June 26.	Mrs. A. Sproatt	Mrs. C. Hollinrake.
Wellington Chapter of the Imperial Order Daughters of the Empire.	Lumsden, Sask	June 26	Miss I. McArthur	Miss M. Wilkie.
Listowel Busy Bee Chapter of the Imperial Order Daughters of the Empire.	Listowel, Ont.	June 26.	Miss E. Rouston	Miss E. Bamford.
McLeod Local Council of Women	McLeod, Alta.	June 26.	Miss A. Muir	Mrs. F. Davies.
Sarah Wells Chapter of the Imperial Order Daughters of the Empire.	Sardis, B.C.	June 26.	Mrs. G. Raley	Mrs. E. Farthing.
Major Pete Anderson Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta	June 27.	Miss E. Driscoll.	Miss M. Stocks.
Local Council of Women, Dauphin	Dauphin, Man	June 27	Miss M. Bready	Mrs. E. Walker.
Kerrobert Chapter of the Imperial Order Daughters of the Empire.	Kerrobert, Sask.	June 29	Mrs. G. Fraser	Mrs. Bateman.
Hampshire Chapter of the Imperial Order Daughters of the Empire.	Cardston, Alta.	June 29	Mrs. V. Christie.	Mrs. H. Stacpoole.
Saskatoon Municipal Chapter of the Imperial Order Daughters of the Empire.	Saskatoon, Sask	June 29.	Mrs. T. Osborne	Miss J. Stewart.
Manitoba Blue Cross Fund	Winnipeg, Man	June 26.	Mrs. M. Coombes	Miss E. Tupper.
Red Deer Local Council of Women	Red Deer, Alta	June 26	Mrs. F. Galbraith	Mrs. C. Houstis.
Robert Bruce Chapter of the Imperial Order Daughters of the Empire.	Quebec, Que.	June 26.	Miss McClask	Mrs. M. Pugh.
204th Battalion Women's Auxiliary	Toronto, Ont.	June 27.	Mrs. A. Price	Mrs. J. Orr.
Great War Next-of-Kin Association Coleman.	Coleman, Alta	June 29	Mrs. E. Lonsbury	Miss M. Chalmers.
Princess Beatrice Chapter of the Imperial Order Daughters of the Empire.	Port Arthur, Ont.	July 8.	Mrs. T. Andrew	Miss E. Bray.
Scott Road Chapter of the Imperial Order Daughters of the Empire.	New Westminster, B.C.	July 9	Mrs. A. Butler.	Mrs. M. King.
Admiral Sir Rosslyn Wemyss Chapter of the Imperial Order Daughters of the Empire.	New Westminster, B.C.	July 11.	Mrs. R. Scott	Mrs. E. Johnston.
Chamberland Chapter of the Imperial Order Daughters of the Empire.	Toronto, Ont.	July 11.	Mrs. S. Beatty	Mrs. H. Crowe.
De Monts Chapter of the Imperial Order Daughters of the Empire.	St. John, N.B.	July 8	Mrs. G. McLeod.	Mrs. S. Jones.
Toronto Municipal Chapter of the Imperial Order Daughters of the Empire.	Toronto, Ont.	July 8.	Mrs. A. MacMurchy	Mrs. A. Reid.
Harry Connor Chapter of the Imperial Order Daughters of the Empire.	Camrose, Alta	July 6	Mrs. A. Kerr.	Miss W. McSkimming.
Isobel Hampton Chapter of the Imperial Order Daughters of the Empire.	London, Ont	July 8	Mrs. J. Wilson.	Miss L. Reilly.
West Pieton Local Council of Women.	Pieton, Ont.	June 29	Miss E. Primrose	Mrs. L. Arthur.
Col. Moody Chapter of the Imperial Order Daughters of the Empire.	New Westminster, B.C.	July 6.	Mrs. H. Major	Mrs. C. Major.
Col. Wyndham Chapter of the Imperial Order Daughters of the Empire.	Okotoks, Alberta	July 5	Mrs. C. Gaskell.	Mrs. E. Gough.
Campbell Collins Chapter of the Imperial Order Daughters of the Empire	East Burnaby, B.C	July 6	Mrs. E. Hellie	Mrs. M. Lothian.
Aukikabee Chapter of the Imperial Order Daughters of the Empire.	St. Thomas, Ont.	July 5	Miss M. Cameron	Miss K. Gerrard.
Georgia Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C.	July 4	Mrs. J. Griffith	Miss G. Gambie.
Lady Evelyn Cavendish Chapter of the Imperial Order Daughters of the Empire	Montreal, Que.	July 6	Miss D. Drummond	Miss P. Shatford.
Lord Salisbury Chapter of the Imperial Order Daughters of the Empire.	Toronto, Ont.	July 10	Mrs. N. Beal.	Mrs. J. Montgomery.
Earl of Shelburne Chapter of the Imperial Order Daughters of the Empire.	Shelburne, Ont	July 10	Mrs. E. Frank	Mrs. E. Stokes.
47th Battalion Social Association	Vancouver, B.C.	July 2	Mrs. M. McKay.	Mrs. Wynne.
Women's Patriotic League of Listowel	Listowel, Ont.	July 8	Mrs. O. Foster	Mrs. M. Rennie.

List of War Charity Societies Registered during Fiscal Year.—*Continued.*

Name.	Head Office.	Date.	President or Regent.	Secretary.
Dunnville Women's Patriotic Society	Dunville, Ont.	July 8	Mrs. E. Jackson	Mrs. M. Haun.
Board of the I.O.D.E. Convalescent Soldiers Home or Hospital.	Winnipeg, Man.	July 11	Mrs. M. Wright	Mrs. M. Sutherland.
St. Clair Chapter of the Imperial Order Daughters of the Empire.	Sarnia, Ont.	July 6	Mrs. McBurney	Miss O. Logie.
Fédération des Femmes Canadiennes Françaises.	Ottawa, Ont.	June 17	Mde. Marchand.	Mde. A. Helanger.
Broadview Knitting Auxiliary	Ardley P.O., B.C.	July 6	Mrs. E. Smith	Miss E. McCabe.
Ladies Auxiliary of the 74th Battalion, C.E.F.	Toronto, Ont.	July 11	Miss M. Armour	Miss A. Hills.
Western Canada's Jewish Fund of the Relief of War Sufferers.	Winnipeg, Man.	July 8	M. Hyman.	S. Almasoff.
Vancouver Comforts Forwarding Committee.	Vancouver, B.C.	July 9	Mrs. H. Cochrane.	Miss B. Nelson.
Anna Turnbull Chapter of the Imperial Order Daughters of the Empire.	Wakan, Sask.	July 4	Mrs. D. Flynn	Miss E. Lepine.
Brunswick Chapter of the Imperial Order Daughters of the Empire.	St. John, N.B.	July 10	Mrs. M. Fenton	Mrs. J. Seammell.
Captain Harry Coombs Chapter of the Imperial Order Daughters of the Empire	Peace River, Alta.	July 11	Mrs. E. Paterson.	Miss A. Kelley.
Franco-British Aid Society	Toronto, Ont.	July 8	Prof. J. Squair	Mrs. W. Rose.
Toronto Conference for the Relief of Jewish War Sufferers.	Toronto, Ont.	July 6	M. Goldstick	J. L. Cohen.
Original's Club.	Toronto, Ont.	July 8	J. D. Proctor	F. Fallows.
John G. Howard Chapter of the Imperial Order Daughters of the Empire.	Toronto, Ont.	July 20	Mrs. K. Marrow	Mrs. F. McMulkin.
Royal Balmoral Chapter of the Imperial Order Daughters of the Empire.	Balmoral, Man.	July 20	Mrs. J. Cutter.	Mrs. N. Hill.
Montreal Day Nursery	Montreal, Que.	July 19	Mrs. W. Dixon	Miss E. Thomas.
Festubert Chapter of the Imperial Order Daughters of the Empire.	Saskatoon, Sask.	July 15	Mrs. J. Balfour.	Mrs. W. White.
Italian Canadian Soldiers' Aid	Toronto, Ont.	July 20	Geo. Glionna	E. D'Angelo.
Lumsden Chapter of the Imperial Order Daughters of the Empire.	Lumsden, Sask.	July 15	Mrs. A. Hynds.	Mrs. E. Barton.
Victoria Municipal Chapter of the Imperia Order Daughters of the Empire.	Victoria, B.C.	July 12	Mrs. F. Griffiths	Mrs. J. Miller.
Dundas Women's Patriotic League.	Dundas, Ont.	July 13	Mrs. J. Bertram.	Mrs. J. Lennard.
Havelock Trench Club	Havelock, Ont	July 12	Miss G. Brewster	Miss Z. Paget.
Silver Maple Leaf Society	Wiarton, Ont.	July 12	Mrs. H. Stephens	Miss A. Burt.
Toronto Women's Liberal Association.	Toronto, Ont.	July 16	Mrs. H. Bundy	Mrs. L. Tilley.
Jura Guild	Thedford, Ont.	July 22	Miss I. Niddery.	Miss L. Brander.
Manyberries War Fund Association	Manyberries, Alta.	July 17	J. F. Berry	G. Bailey.
Captain Athol Wallace Chapter of the Imperial Order Daughters of the Empire.	St. Boniface, Man.	July 15	Mrs. R. Guna.	Miss B. Morton.
Hope Soldiers Aid Society	Hope, B.C.	July 9	Mrs. J. Wardle	Mrs. W. A. Lawes.
Bolgian Aid Society of Victoria, B.C.	Victoria, B.C.	Aug. 9	J. J. Shallcross.	W. S. Terry.
Millbrook War Relief Society	Millbrook, Ont.	Aug. 10	Mrs. M. E. Eskins	Mrs. B. Campbell.
Marne Military Society	Vancouver, B.C.	Aug. 10	Mrs. D. Simpson	Mrs. J. Wright.
Lord Charles Beresford Chapter of the Imperial Order Daughters of the Empire	Vancouver, B.C.	Aug. 9	Miss K. Hall.	Mrs. W. H. Lyne.
Medicine Hat Returned Soldiers Welcome League	Medicine Hat, Alta.	Aug. 9	Mrs. I. C. Leydard	Mrs. E. Jewell.
Craik Chapter of the Imperial Order Daughters of the Empire.	Craik, Sask.	Aug. 9	Mrs. M. A. Ross.	Mrs. M. E. Wilson.
French Red Cross Society	Vancouver, B.C.	Aug. 9	Mrs. J. Rogers	Mrs. L. Springer.
Campaigners of the Great World War Association.	Vancouver, B.C.	July 27	Finley McLaren	R. H. Young.
Manitoba Branch of the Canadian Field Comforts Commission.	Winnipeg, Man.	July 5	Mrs. M. B. McMeans.	Mrs. J. W. Duncan.
Kingston Unit of the Army and Navy Veterans.	Kingston, Ont.	Aug. 1	J. E. Evans.	H. W. Shaw.
Women's Auxiliary to the Canadian Engineers.	Vancouver, B.C.	July 25	Mrs. R. L. Gardner.	Mrs. B. Tommason.
Boscaurn Chapter of the Imperial Order Daughters of the Empire.	Lunenburg, N.S.	July 25	Mrs. G. Polley	Mrs. J. A. Hirtle.
St. George and District Patriotic War Relief Fund.	St. George, Ont.	Aug. 2	John Malcolm.	R. E. Lawrasoa.
Cobalt $5,000 Club.	Cobalt, Ont.	Aug. 2	B. Neilly	H. T. Browning.
Sherbrooke Patriotic Association	Sherbrooke, Que.	July 25	Mrs. H. M. Bowen	Mrs. L. A. Rosenbloom
Wiseton Field Association	Wiseton, Sask.	July 30	Mrs. S. Hill	Mrs. J. A. Carruthers.
Canadian Council of the Girl Guides Association.	Toronto, Ont.	July 30	Lady Pellatt	Miss E. M. Mairs.
Navy League of Canada	Montreal, Que.	Aug. 6	W. L. Ross	M. P. Fennell, jr.
Evangeline Chapter of the Imperial Order Daughters of the Empire.	Halifax, N.S.	Aug. 12	Mrs. M. W. Doane.	Miss N. Vidite.
Admiral Vansittart Chapter of the Imperial Order Daughters of the Empire.	Woodstock, Ont.	Aug. 10	Miss Maude Wilson.	Miss A. Wallace.
Northern Star Chapter of the Imperial Order Daughters of the Empire.	Glenella, Man.	July 27	Mrs. D. J. Ferguson.	Mrs. E. A. Taylor.
Lambton's 149th Chapter of the Imperial Order Daugbters of the Empire.	Watford, Ont.	May 6	Mrs. R. C. McLeay.	Mrs. J. W. McLaren.
Plum Creek Chapter of the Imperial Order Daughters of the Empire.	Souris, Man.	April 29	Mrs. A. J. Hughes.	Mrs. J. H. More.

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Name.	Head Office.	Date.	President or Regent.	Secretary.
Asquith Chapter of the Imperial Order Daughters of Empire.	Edmonton, Alta	Aug. 6.	Mrs. A. Davies	Mrs. F. E. Forster.
Thain McDowell Chapter of the Imperial Order Daughters of the Empire.	Brockville, Ont	Aug. 8	Mrs. A. Bolton	Mrs. M. Sturgeon.
Glencoe Chapter of the Imperial Order Daughters of the Empire	St. Andrews, Ont	Aug. 2	Mrs. P. J. McDonnell	Mrs. S. G. Lawrason.
Kawartha Chapter of the Imperial Order Daughters of the Empire.	Lindsay, Ont	July 26	Lady Hughes	Miss C. Sootheran.
Lieutenant Hornby Chapter of the Imperial Order Daughters of the Empire.	New Westminster, B.C.	July 25	Mrs. I. C. Maclennan	Mrs. J Grinston.
Edwin Eastman Chapter of the Imperial Order Daughters of the Empire.	New Westminster, B.C	July 25	Mrs. H B. Webb	Mrs. John Heaps.
Kamloops Soldiers Comforts Club	Kamloops, B.C	Aug. 19	Mrs. Wm. Fulton.	Mrs. M. White.
Patriotic Workers of Magog	Magog, Que	Aug. 15.	Mrs. Geo. Cunningham.	Mrs. Joha West.
Catholic Army Huts	Ottawa, Ont	Aug. 26.	J J. Leddy	J. L. Murray.
The St. John Working Committee	Edmonton, Alta	Aug. 20	Miss M. L. Osborne	Miss Dorothy Short.
Women's Patriotic League of Oil Springs.	Oil Springs, Ont.	Aug. 16	Mrs. S. J. Sutherland.	Mrs. C. Anderson.
Sarnia War Chest Fund	Sarnia, Ont	Aug. 14	H J. Johnston	Miss M. B. Munroe.
Springmount Patriotic Helpers	R.R. No. 3 Owen Sound, Ont.	July 2	Mrs. E. Hammond.	Mrs. G. Johnston.
Messines Ridge Chapter of the Imperial Order Daughters of the Empire.	Revelstoke, B.C	Aug. 14	Mrs. F. W. Laing.	Mrs. M. Hamilton.
Captain Vancouver Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C.	Aug 14	Mrs. E. Craig	Miss B. Gwyn.
Dr George M Dawson Chapter of the Imperial Order Daughters of the Empire	Dawson, Y T	Aug. 20	Mrs. A E. Lee	Mrs. T. G. Williams.
Canadian Avintion Aid Club (Calgary Branch).	Calgary, Alta	Aug. 23	Mrs. Ellis Browne.	Mrs. M. Beck.
Haileybury Service League	Haileybury, Ont.	Aug. 29	Mrs. E. L. Cadman.	Mrs. N. Jacobi.
Belgium Children's Relief Fund of Montreal.	Montreal, Que.	Sept. 3	The Countess della Faille de Laverghem.	Mrs. Clarence I. de Sola.
Colonies Chapter of the Imperial Order Daughters of the Empire	South Salt Spring, B.C.	Aug. 29	Mrs. T. M. Jackson	Mrs. D. Maxwell.
Sir Isaac Brock Chapter of the Imperial Order Daughters of the Empire.	Welland, Ont	Aug. 30	Mrs. L. B. Livingston.	Mrs. J. D Knowles.
H.M S. Vindictive Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C	Aug. 28	Mrs. K Clingsten	Miss H. R. Forbes.
Harry Lauder Chapter of the Imperial Order Daughters of the Empire.	Havelock, Ont	Aug. 29	Miss Jane Vance.	Miss Nellie Haig.
Abigail Chapter of the Imperial Order Daughters of the Empire.	Port Rowan, Ont.	Sept. 15.	Mrs. J. L. Buck	Mrs. W. H. Meek.
Jeffrey Hale Burland Chapter of the Imperial Order Daughters of the Empire.	Montreal, Que.	Sept. 12	Mrs. H. Osborne	Mrs. J. Stanley Everett.
Moosejaw Local Council of Women	Moosejaw, Sask..	Sept. 10	Mrs. Angus Graham	Mrs. A. G. Halstead.
25th Elgin Regiment Chapter of the Imperial Order Daughters of the Empire.	St. Thomas, Ont	Sept. 12	Mrs. M. Turner	Mrs. M. Williams
Local Council of Women, of Victoria and Vancouver Island.	Victoria, B.C	Sept. 5	Miss S R. Crease	Miss F. H. Burns.
Fred Fisher Chapter of the Imperial Order Daughters of the Empire.	Westmount, Que	Sept. 27	Miss F. I. Jenkins	Miss. O Dyke.
Toronto Board of Education War Charities	Toronto, Ont	Sept 27	G. J. Steele	Wm. C. Wilkinson.
Sir Douglas Haig Auxiliary	Toronto, Ont	Sept. 3	Mrs. B. Gordon	Mrs. M. A. McKeeknie.
Gore Bay War Auxiliary	Gore Bay, Ont	Sept. 5	Mrs. J. L. P. Hewson	Mrs. Frank Matchmor.
Kamloops Returned Soldiers Club	Kamloops, B.C	Sept. 5	D. Wm. Rowland	Jas. R. Colley.
Leith Patriotic Society	Leith, Ont	Sept. 10	Miss Ada Scott	Miss Kate Rutherford.
Winnitoba Chapter of the Imperial Order Daughters of the Empire	Winnipeg, Man	Sept. 25	Mrs. A. Baynes	Mrs. E. E. Vinew.
'Last Post' Imperial Naval and Military Contingency Fund.	Montreal, Que..	Sept. 25	Capt J. T. Walsh, R.N.R.	A. H. D. Hair.
Red Gables War Workers	Toronto, Ont	Sept. 26	Mrs. Sarah T. Warren	Miss Constance B. Laing.
Army and Navy Veterans in Canada (Ottawa and District).	Ottawa, Ont	Sept. 30	E. W. Hubbell	B. Turner.
Mansfield Women's Patriotic League	Mansfield, Ont	Sept. 13	Mrs. R. J. Murphy	Miss Gertrude Campaign.
Cecil Rhodes and Devonshire Girls Club Auxiliary, of the Imperial Order Daughters of the Empire	Regina, Sask	Sept. 13	Mrs. F. Barker	Mrs. W. B. Grant.
Cooksville District Patriotic League	Cooksville, Ont	Sept. 16	Mrs. A. L. McLelland	Mrs. M. G. Foster.
McLeod Avintion Aid Club	McLeod, Alta	Sept. 20	Mrs. D. W. Davis.	Mrs. A. D. Ferguson.
The Scottish Daughters League	Vancouver, B.C	Sept. 25	Mrs. I Galt	Mrs. J. M. Robertson.
Edmonton Local Council of Women	Edmonton, Alta	Sept. 25	Mrs. K. Forbes-Reid	Mrs. Evon Greene.
Alex. McQueen Cahpter of the Imperial Order Daughters of the Empire.	Edmonton, Alta	Sept. 26	Mrs. Earle Hardisty	Miss M. A. Gormaa.
Women's Patriotic League of Bowmanville	Bowmanville, Ont	Sept. 25	Mrs. V. Deyman	Mrs. M. Hillier.
Admiral Roger Keyes Chapter of the Imperial Order Daughters of the Empire.	Alliance, Alta	Sept. 21	Miss A. M. Gibson	Miss N. F. Jennings.

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Name.	Head Office.	Date.	President or Regent.	Secretary.
The Weston Sanatorium Club	Toronto, Ont	Sept. 20	Mrs. R. W. Prittie	Mrs. W. J. Lougheed.
Louvain Chapter, of the Imperial Order Daughters of the Empire.	Yorkton, Sask	Sept. 18	Mrs. F. Hukins	Mrs. F. C. Wilson.
Bruce Mines Young Ladies Patriotic Society.	Bruce Mines, Ont	Sept. 10	Miss H. H. Duncan	Miss Gertrude Prout.
Chatsworth War Workers Association	Chatsworth, Ont	Sept. 5	Mrs. E. C. Breese	Mrs. A. M. Breese.
The Petewawa Camp Chapter of the Imperial Order, Daughters of the Empire.	Pembroke, Ont	Sept. 5	Mrs. E. A. Dunlop	Miss G. G. Douglas.
General Sam Steele Chapter of the Imperial Order Daughetrs of the Empire.	Portage la Prairie, Man.	Sept. 12	Mrs. S. B. Cowan	Mrs. F. L. Richardson.
Okanagan Women's Patriotic Society	Vernon, B C	Sept. 24	Mrs. C. H. Watts	Mrs. L. H. Rourke.
St. George Chapter of the Imperial Order Daughters of the Empire.	Toronto, Ont	Sept. 16	Miss K. O'Brian	Miss Frances DuMoulin.
The Soldiers' Relatives League	Picton, Ont	Sept. 19	Mrs. M. Spencer	Mrs. M. E. Hubba.
The Ladies Patriotic Auxiliary of Berkeley	Berkeley, Ont	Sept. 17	Miss E. M. Ritchie	Mrs. George Carwell.
The Canadian Branch of the Scottish Women's Hospitals.	Ottawa, Ont	Sept. 12	Wm. E. Matthews	R. G. Code.
The Women's Patriotic League of Norwich	Norwich, Ont	Sept. 23	Miss I. H. Carrell	Misa E. Vigor.
Bannockburn Charter of the Imperial Order Daughters of the Empire.	Nokomis, Sask	Sept. 27	Mrs. H. C. Steeves	Mrs. R. J. Johnston.
The War Auxiliary S.S. 26 Seeord School	Toronto, Ont	Oct. 2	Mrs. Clara Taylor	Mrs. Annie Hoyland.
The Maple Leaf Patriotic Workers	Vancouver, B.C	Oct. 2	Mary L. Mathewson	C. A. Wright.
Duchess of Sutherland Chapter of the Imperial Order Daughters of the Empire	Edmonton, Alta	Oct. 2	Mrs. W. C. Sterling	Mrs. H. Shaw.
Queen Mary Needlework Guild	Montreal, Que	Oct. 3	Mrs. D. Forbes Angus	Mrs. John Turnbull.
Women's Auxiliary to the Seaforths	Vancouver, B.C	Oct. 1	M. L. Menzies	Maude M. Nasmith.
Peterborough Progressive Club	Peterborough, Ont	Sept. 28	H. S. Peck	Mary A. Rose.
The Scottish Daughters' League	Vancouver, B.C	Sept. 25	Mrs. I. Galt	Mrs. J. M. Robertson.
Chesley Patriotic League	Chesley, Que	Oct. 2	C. J. Halliday	E. B. Caldwell.
King Arthur Chapter of the Imperial Order Daughters of the Empire.	Quebec, Que	Sept. 27	Miss M. J. Coombe	Miss M. J. Coombe.
South Line Chapter No. 284 of the Imperial Order Daughters of the Empire.	Walkerton, Ont	Oct. 1	Martha Kirstine	Mary Kirstine.
Lloyd George Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta	Oct. 2	Mrs. C. B. Cogswell	Mrs. H. Darling.
Disraeli Chapter of the Imperial Order Daughters of the Empire.	Ottawa, Ont	Oct. 2	Mrs. A. J. Freiman	Miss Ada Abelson.
56th Society	Calgary, Alta	Oct. 2	A. C. Wright	H. R. Sargeant.
The Overseas Club	London, Eng	Oct. 1	J. Harley Brown	E. R. B. Eardley.
3rd Battalion Toronto Regimeat Women's Auxiliary.	Toronto, Ont	Oct. 9	Mrs. A. Jarvis	Mrs. I. MacMurchy.
Women's Patriotic League of Little Current.	Little Current, Ont	Oct. 7	Clara W. Carruthers	Helen C. Turner.
Canadian Jewish Committee	Montreal, Que	Oct. 7	Lyon Cohen	Hattie Silverman.
Oshawa Women's War Relief Society	Oshawa, Ont	Oct. 7	Evelyn E. Bull	Mrs. H. M. William.
Wiarton Patriotic League	Wiarton, Ont	Oct. 5	W. M. Tyson	W. W. Prudham.
Township of Johnston Service League	Desbarats, Que	Oct. 4	W. J. Swanson	J. P. Marshall.
Women's Patriotic League of Flora	Flora, Ont	Oct. 5	Mrs. B. M. Wissler	Miss Winnifred Card.
William Walbeem Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C	Oct. 9	Mrs. M. Walbeem	Miss E. B. Walbeem.
Seven Seas Chapter of the Imperial Order Daughters of the Empire.	St. John, N.B	Oct. 5	Mrs. L. Estey	Helen C. Hannah.
The Somme Club of Kingston	Kingston, Ont	Oct. 4	Norma E. McFederidge.	Miss Bella McCall.
Wolfe and Montcalm Chapter of the Imperial Order Daughters of the Empire.	Montreal, Que	Oct. 10	Mrs. H. Joseph	Mary E. Neill.
Clementina Fessenden Chapter of the Imperial Order Daughters of the Empire.	Regina, Sask	Oct. 10	Miss F. C. Harding	Miss M. McGlachlin.
Daughters of the Allies	Calgary, Alta	Oct. 11	F. B. Clum	Beatrice Fenkell.
H.M.S. Lion Chapter of the Imperial Order Daughters of the Empire.	Chilliwack, B.C	Oct. 11	Ethel Nesbitt	Lane Kirkly.
Fort Edmonton Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta	Oct. 10	Mrs. P. E. Canniff	G. J. A. Reany.
Girls Patriotic Club of Bowmanville.	Bowmanville, Ont	Oct. 17	Miss Ethel Morris	M. L. McLean.
Edinburgh Patriotic Club	Montreal, Que	Oct. 11	Annie Hay Louttit	Mary Flitchett.
Secours National of Toronto	Toronto, Ont	Oct. 9	Sir Glenholme Falconbridge.	John MacIntosh Lyle.
Admiral Sir Robert K. Arbuthnot Chapter of the Imperial Order Daughters of the Empire.	New Westminster, B.C.	Oct. 25	C. E. Pearson	Ida M. Huff.
A Corner of Bligbty	Paris, France	Oct. 29	Miss L. Butler	Mrs. M. Sewell.
Prairiedale Benevolent Association	Mayor, Sask	Oct. 17	W. M. Hambidge	I. T. Branigan.
The Chilliwack Junior Patriotic Society	Chilliwaek, B.C	Oct. 19	Miss E. H. Brannick	Mrs. P. Muirhead.
St. Eloi Chapter of the Imperial Order Daughters of the Empire.	Chilliwaek, B.C	Oct. 18	Mrs. W. H. Amis	Mrs. W. J. Warbrick.
Uxbridge Women's Patriotic League	Uxbridge, Ont	Oct. 19	A. M. Ormiston	E. H. Willis.
Cobequid Chapter of the Imperial Order Daughters of the Empire.	Springbill, N.S	Oct. 18	Miss H. Hunter	Miss A. H. Murray.
Army and Navy Veterans in Canada	Winnipeg, Man	Oct. 21	W. H. Tupper	R. C. Irving.
New Brunswiek Commercial Travellers Patriotic Club.	St. John, N.B	Oct. 17	W. A. Stewart	J. E. Angevine.
Brandon Returned Soldiers Association	Brandon, Man	Oct. 13	H. Carter	John Inglis.
Comrades of the Great War	Vancouver, B.C	Oct. 14	S. J. Gothard	P. Fortune.

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List of War Charity Societies Registered during Fiscal Year—*Continued.*

Name.	Head Office.	Date.	President or Regent.	Secretary.
Soldiers' Wives' League, Ottawa Branch	Ottawa, Ont.	Nov. 2	E. S. Fiset	J. E. Halliek.
British Prisoners' Bread Fund	Toronto, Ont.	Nov. 7	H. F. Dalrymple Sewell.	C. A. Lindsay.
Beaver House Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta	May 23	Mrs. J. Gillespie	Mrs. J. D. Hyndman.
The Women's Patriotic League of Waterford.	Waterford, Ont.	Oct. 14	Mrs. Helen Reynolds.	Grace R. Teeter.
Cookshire Patriotic Association	Cookshire, Que.	Oct. 30	A. S. M. French	M. R. Halls.
Municipal Chapter of Ottawa of the Imperial Order Daughters of the Empire.	Ottawa, Ont.	Nov. 6	Lady Pope	Miss Ritchie.
Martha Munger Black Chapter of the Imperial Order Daughters of the Empire.	Dawson, Y.T.	Nov. 2	Mrs. F. Osborne	Mrs. A. Black.
Port Burwell Patriotic Society	Port Burwell, Ont.	Nov. 4	Mrs. L. M. Fay	E. Yondale.
Scotia Chapter of the Imperial Order Daughters of the Empire.	Truro, N.S.	Oct. 29	Mrs. J. L. Patillo	Mrs. M. K. Archibald.
Port Credit Patriotic League	Port Credit, Ont.	Nov. 6	Miss Ella Diltz	Kate Duncan.
Tywysog Cymru Chapter of the Imperial Order Daughters of the Empire.	Vancouver, B.C.	Oct. 30	Mrs. F. Morgan	Mrs. M. Roberts.
Wendell Stacey Chapter of the Imperia Order Daughter of the	Chilliwack, B.C.	Nov. 2	S. J. Stacey	Mrs. A. E. Graham.
Young Women's Christinn Association	Toronto, Ont.	Oct. 29	Mrs. R. C. McDonald	Miss J. M. Pearce
The Women's Patriotic League of Niagara Falls.	Niagara Falls, Ont.	Oct. 29	G. M. Kinsinger	G. G. McMurray.
West Kildonan Soldiers' Aid Society	Winnipeg, Man.	Oct. 30	J. E. S. Gannon	J. W. Doubleday.
Major General McRae Chapter of the I.O.D.E.	Glencoe, Ont.	Nov. 8	Mrs. A. Aldred	Mrs. C. M. Wright.
Canadian War Contingent Association.	Toronto, Ont.	Nov. 14	A. E. Gooderham	A. Plumptre.
Toronto Branch of the Overseas Club	Toronto, Ont.	Nov. 8	H. Fane D. Sewell	E. Wodson.
Gazette Tobacco Fund	Montreal, Que.	Nov. 8	E. F. Slack	F. W. Jones.
Ladies Auxiliary Army and Navy Veterans in Canada.	Vancouver, B.C.	Nov. 19	M. B. Warsnop	Mrs. E. Ward.
Colonel By Chapter of Imperial Order Daughters of the Empire.	Ottawa, Ont.	Nov. 11	Mrs. Thos. Ross	Mrs. H. T. Gorrie.
Arthur Chapman Chapter of the Imperial Order Daughters of the Empire.	Trail, B.C.	Nov. 11	A. W. Warren	F. I. Binns.
Garden Craft Club	Toronto, Ont.	Nov. 19	H. E. Gibbons	N. G. Bourlier.
Lord Nelson Chapter of the Imperial Order Daughters of the Empire.	Toronto, Ont.	Nov. 19	Miss M. A. Weir	Miss P. Hayes.
Victoria Blue Cross Society	Victoria, B.C	Nov. 19	Marion Robertson	N. Y. Hawlings.
Midland Soldiers' Next-of-Kin Association	Midland, Ont	Nov. 16	E. R. Osborne	O. Bryant.
Major George Ross Smith Chapter of the Imperial Order Daughters of the Empire.	Chatham, Ont	May 16	Miss Helene Pilkey	Mrs. Thomas Cottcir
East Hamilton Branch of the Great War Veterans Association of Canada.	Hamilton, Ont.	Nov. 26	John Anderson	R. Tillotson.
Great War Veterans Association of Canada Ontario Provincial Command.	Toronto, Ont.	Dec. 10	C. E Jeakins	W. E. Turley.
Pembroke Branch of the Great War Veterans' Association of Canada.	Pembroke, Ont.	Nov. 27	E. H. McLean	A. G. Acheson.
Sons and Daughters of Ireland Protestant Association.	Toronto, Ont.	Nov. 27	Geo. McCombe	James Steele.
North Carrick Chapter, Imperial Order Daughters of the Empire.	Walkerton, Ont.	Nov. 22	E. Hicklings	M. J. Hogg.
Lansdowne Service League	Lansdowne, Ont.	Oct. 9	Vera Wigston	Mabel Johnston.
Ford City Chapter of the Imperial Order Daughters of the Empire.	Ford City, Ont.	Nov. 22	Mrs. Albert	Miss F. Askin.
Empress Chapter of the Imperial Order Daughters of the Empire.	Empress, Alta	June 15	E. M. Cusack	Mrs. G. G. Peters.
Adair Carss Chapter of the Imperial Order Daughters of the Empire.	Prince Rupert, B.C.	Nov. 22	J. B. Reily	B. Baniter.
Paris Maple Leaf Patriotic Club	Paris, Ont.	Nov. 22	Mrs. A. I. Brydges.	F. Bee.
Ideal Patriotic Club	Toronto, Ont.	Nov. 29	Miss A. M. Netherton.	Miss F. N. Anthony
Welland Branch of the Great War Veterans Association.	Welland, Ont.	Nov. 26	J. E. Cohoe	A. F. Smees.
Renfrew Branch of the Great War Veterans Association of Canada.	Renfrew, Ont	Nov. 26	R. L. Wells	H. J. Airth.
Seaford Chapter of the Imperial Order Daughters of the Empire.	Chilliwack, B.C.	May 11	E. G. Childerhose	Mrs. B. M. Porter.
Revelstoke Branch of the Great War Veterans Association of Canada.	Revelstoke, B.C.	Nov. 27	Thos. Hope	G. H. Garner.
Wainwright Chapter of the Imperial Order Daughters of the Empire.	Wainwright, Alta	Nov. 27	R. G. Fairhead	A. J. Logan.
Parkdale Branch of the Great War Veterans Association of Canada.	Toronto, Ont.	Nov. 27	R. W. Fletcher	E. G. Ball.
Norfolk Branch of the Great War Veterans Association of Canada.	Simcoe, Ont.	Nov. 26	L. F. Aiken	I. Pratt.
Victoria Branch of the Great War Veterans Association of Canada.	Victoria, B. C	Oct. 2	A. W. Webb	G. E. Heinekey.
Mrs. Iles Soldiers' Committee	Montreal, Que.	Nov. 23	G. Harte	E. Shanly.
West Hamilton Branch of the Great War Veterans Association of Canada.	Hamilton, Ont.	Oct. 29	H. A. Burbridge	F. W. Cooke.
Aylmer Branch of the Great War Veterans Association of Canada.	Aylmer, Ont.	Dec. 27	W. G. Butcher	A. R. Christie.

List of War Charity Societies Registered during Fiscal Year—*Continued.*

Name.	Head Office.	Date.	President or Regent.	Secretary.
Sarnia Branch of the Great War Veterans Association of Canada.	Sarnia, Ont.....	Dec. 30	J. E. Lea	Thomas Weston.
Lest We Forget Club	New Westminster, B.C.	Dec. 12	Mrs. E. M. Rothwell	Mrs. J. Lord.
Major Livingstone Chapter of the Imperial Order Daughters of the Empire.	Yorkton, Sask....	Dec. 11	Mrs. C. Atkin..	Mrs. R. Cashmore.
Secours National, London Branch	London, Ont. ..	Dec. 12	Mrs. C. S. McLean...	Miss M. Meredith.
French Branch, City of Montreal, Great War Veterans Association of Canada.	Montreal, Que.....	Dec. 6.	Lt.-Col. L. R. Lafleche	E. Frereault.
King's Daughters of British Columbia....	Victoria, B.C ..	Dec. 5	Mrs. R. McNair	Miss K. C. Russell.
Lady Laurier Chapter of the Imperial Order Daughters of the Empire.	Cornwall, Ont.....	Dec. 11	J. E. Chevrier.. ...	Mrs. R. Lalonde.
19th Alberta Dragoons Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta ...	Dec. 11	Mrs. G. Downes . .	Mrs. W. D. Craig.
Red Cross Dramatic Society of Victoria, B.C.	Victoria, B.C.... .	Dec. 6	D. J. Angus. .	E. J. Donn.
General Brock Chapter of the Imperial Order Daughters of the Empire.	Brockville, Ont ..	Dec. 6	Mrs. J. A. Johnston .	Mrs. J. S. Copland.
Ben Torrance Chapter of the Imperial Order Daughters of the Empire.	Listowel, Ont.....	Dec. 5	M. Torrance.. ...	Mrs. Chamney.
Active Service Chapter of the Imperial Order Daughters of the Empire.	Alberton, P.E.I	Dec. 7	Mrs. B. Rogers.	Mrs. Wm. McLean.
Mistanusk Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta ..	Dec. 6	Mrs. R. W. Cantly..	Mrs. J. J. Anderson.
Brampton Ladies Cheereo Club..	Brampton, Ont... .	Dec. 4	M. J. Sharpe.... .	Mrs. J. M. Natress.
Patricia Club of Prince Albert	Prince Albert, Sask.	Dec. 7	J. A. R. Alexaader..	M. Y. Davis.
St. Dunstans Hostel for Blinded Soldiers, Calgary Branch.	Calgary, Alta..... .	Dec. 4	C. A. Hayden.....	E. Houlton.
Edgerton Torrance Chapter of the Imperial Order Daughters of the Empire.	Milverton, Ont.....	Dec. 3	Mrs. L. P. Lye.....	Miss L. M. White.
London, Ontario, Comforts Forwarding Committee (Christian Scientists).	London, Ont.....	Dec. 23	Mrs. L. McCutcheon .	Mrs. A. B. Nash.
Quebec Serbian Relief Committee...	Quebec, Que..	Dec. 17	Mrs. C. A. Williams..	Mrs. R. H. Smith.
Navy Branch of the Soldiers Comforts Association.	Long Branch, Ont...	Jan. 2	Mrs. B. M. Harsant ..	Miss Anne Godwin.
Galt Branch of the Great War Veterans Association of Canada.	Galt, Ontario...	Dec. 27	D. Findlay.	Wm. Bailey.
The Princess Circle of the Kings Daughters in British Columbia.	Vancouver, B.C.....	Dec. 13	C. J. Hamilton.	Miss J. E. Mallett.
Timiskaming Branch of the Great War Veterans Association.	Cobalt, Ont.....	Jan. 7.	W. J. Binney ...	A. P. Charlton.
Ioco Good Cheer Club . .	Toronto, Ont.	Jan. 10	Miss Ethel Bird.....	Miss Annabel Brown.
Cardinal Mercier Chapter of the Imperial Order Daughters of the Empire.	Edmonton, Alta .	Jan. 16	Mrs. T. P. Malone ..	Miss Bedard.
Pilot Jack Chapter of the Imperial Order Daughters of the Empire.	Toronto, Ont. ...	Jan. 16	Mrs. W. H. Gooderham.	Miss C. W. Grant.
Edmonton Branch of the Great War Veterans Association.	Edmonton, Alta .	Jan 6	H. Collins.	H. H. Dugdale.
Brantford Branch of the Great War Veterans Association.	Brantford, Que.....	Jan. 10	C. E. Jeakins. .	J. Hutchison.
Stanstead County Branch of the Great War Veterans Association.	Coaticook, Que . .	Jan 7	C. T. Allen	O. G. G. Webster.
Comforts Forwarding Committee (Christian Scientists), Toronto.	Toronto, Ont.....	Sept. 27	Mrs. Caroline M. Land	Mrs. I. M. Fotheringham.
General Burstall Chapter of the Imperial Order Daughters of the Empire.	Bergerville, Que	Jan. 7	Miss M. A. Coombe..	Miss M. A. Coombe.
Good Comrades Chapter of the Imperial Order Daughters of the Empire.	Chilliwack, B.C....	Dec. 10.	Miss O. M. Switzer ..	Miss F. Bell.
Peace River Returned Veterans Welfare Association.	Peace River, Alta.	Jan. 22	Matthew E. Grinshaw	A. Phimester.
St. Thomas, Ontario, Branch of the Great War Veterans Association of Canada.	St. Thomas, Ont....	Jan. 22.	G. C. Haynes. .	A. H. Ward.
Harrison's Corners Chapter of the Imperial Order Daughters of the Empire.	Northfield, Ont....	Jan 18	Mrs. R. B. Ward. . .	Mrs. A. P. Fraser.
Olympic Chapter of the Imperial Order Daughters of the Empire.	Kentville, N. S	Jan. 29	Mrs. Clark.	Miss J. Hardy.
173rd Highlanders (C.E.F.) Association.	Hamilton, Ont.....	Jan. 22.	W. H. Bruce	J. S. Dingwall.
Victoria and Albert Chapter of the Imperial Order Daughters of the Empire.	Prince Albert, Sask.	Jan. 29	Mrs. F. W. Wright .	Mrs. C. S. LaCroix.
Thomas Talbot Chapter of the Imperial Order Daughters of the Empire.	Rossland, B.C.....	Jan. 28	Miss G. F. Martin. ...	Miss H. A. Wallace.
William Day Chapter of the Imperial Order Daughters of the Empire.	New Westminster, B.C.	Jan 23.	Miss F. A. Garraway	Miss M. L. Diamond.
The Great War Next-of-Kin Association.	Victoria, B.C . .	Jan 23.	Mrs. A. Harvey.....	Mrs. J. Smith.
Italian Red Cross Society.... . .	Winnipeg, Man	Dec. 18	A. J. Costigan.....	J. E. Bianchi.
Winnipeg Municipal Chapter of the Imperial Order Daughters of the Empire.	Winnipeg, Man.....	Feb. 9.	Mrs. W. J. Boyd.. ..	Miss M. Johnston.
Trafalgar Chapter of the Imperial Order Daughters of the Empire.	London, Ont	Feb. 8	Mrs. M. J. Atkins.....	Mrs. J. H. Laughton.
Comforts Forwarding Committee (Christian Science), Hamilton.	Hamilton, Ont	Feb. 5	Mrs. W. Falls.....	Mrs. E. Dumbrille.
White School Patriotic Society..	Southampton, Ont.	Feb. 8	M. J. Elliott..... .	E. E. Tranter.

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List of War Charity Societies Registered during Fiscal Year—*Concluded.*

Name.	Head Office.	Date.	President or Regent.	Secretary.
Fredericton Central Committee Chapter of the Imperial Order Daughters of the Empire.	Fredericton, N.B	Feb. 5	L. E. VanWart	A. O. Glen.
Princess Patricia Chapter of the Imperial Order Daughters of the Empire.	London, Ont	Feb. 13	Mrs. C. S. McLean	Mrs. B. M. Turner.
The Toronto and York County District Branch of the Great War Veterans' Association of Canada.	Toronto, Ont.	Feb. 13	J. R. Bell	J. V. Conroy.
Red Magen David Society of Western Canada.	Winnipeg, Man	Feb. 18	Mrs. M. Stockammer	Miss J. Soffer.
Winnipeg Branch of the Great War Veterans' Association of Canada.	Winnipeg, Man	Feb. 18	J. O. Newton	F. W. Law.
53rd Regiment Chapter of the Imperial Order Daughters of the Empire.	Sherbrooke, Que.	May 9	Mrs. F. W. Dakin	Mrs. C. Brett.
Glace Bay Branch of the Great War Veterans' Association of Canada.	Glace Bay, N.S.	Feb. 17	Edward Rogers	J. W. Maxwell.
Grimsby and District Branch of the Great War Veterans' Association of Canada.	Grimsby, Ont	Feb. 18	J. A. M. Livingston	C. E. Vaughan.
116 Battalion Club	Uxbridge, Ont	Dec. 18	N. C. Nicholls	Minnie Gould.
La Section Canadienne de l'Aisne Devastee (The Canadian Section of the Devastated Aisne).	Montreal, Que.	Feb. 10	Mrs. C. R. Macarow	Mrs. B. F. Thomas.
Prince George Branch of the Great War Veterans' Association of Canada.	Prince George, B.C.	Dec. 18, 1918.	L. Vibbard	G. C. Sinclair.
South of France Relief Association	Montreal, Que	" 21, 1918	R. B. G. Dixon	O M. Drew.
West Toronto Branch of the Great War Veterans' Association.	Toronto, Ont.	Feb. 22, 1919	H. Meredith	G. H. Gustar.
Khaki Knitting Club of Colborne	Colborne, Ont	May 13,	Mrs. E. Morkley	Mrs. L. H. Duncan.
Earl of Chatham Chapter Imperial Order Daughters of the Empire.	Chatham, N.B	Feb. 22, 1919.	Mrs. M. Harrison	Mrs. J. W. Brankley.
Chilliwack Municipal Chapter of the Imperial Order Daughters of the Empire.	Chilliwack, B.C.	Dec. 21 1918	Mrs. G. H. W. Ashwell	Mrs. E. H Barton.
Rosedale Chapter of the Imperial Order Daughters of the Empire.	Toronto, Ont.	Feb. 22, 1919.	Mrs. M. H. Spence	Mrs. L. B. Caldwell.
Needlework Guild of St. Catharines	St. Catharines, Ont.	March 24, 1919.	Mrs. E. Campbell	Mrs. M. Abbs.
No. 1 Unit Army and Navy Veterans in Canada	Calgary, Alta	March 24, 1919	J. Drummond	F. E. Harris.
Duke of Connaught Chapter of the Imperial Order Daughters of the Empire.	Wales, Ont.	March 11, 1919	Mrs. J. R. Morgan	Mrs. D. H. Meikle.
48th Highlanders Chapter of the Imperia Order Daughters of the Empire.	Toronto, Ont.	March 19, 1919	Mrs. L. W. N. Darling	Mrs. H. MacKenzie.
Amelia F. Sims Chapter of the Imperial Order Daughters of the Empire.	Toronto, Ont.	March 17,	Mrs. A. T. Rutter	Mrs. J. W. Daniels.
Klondyke Chapter of the Imperial Order Daughters of the Empire.	Dawson, Y.T.	March 13, 1919.	Miss V. Faulkner	Miss I. Kelly.
Benevolent Aid Society	Whitewood, Sask	March 8,	Mrs. C. Campbell	Mrs. M. Gilles.
Wawanesa Chapter of the Imperial Order Daughters of the Empire.	Wawanesa, Man.	March 28,	Mrs. A. Smith	Mrs. A. Kerr.
Lorraine Chapter of the Imperial Order Daughters of the Empire.	Ottawa, Ont	March 26, 1919	Mrs. C. Pepper	Mrs. F. W. Pooler.
Laddie Millen Chapter of the Imperial Order Daughters of the Empire.	Montreal, Que.	March 8, 1919	Miss M. L. Clark	Miss A. Common.
Windsor Patriotic Aid Society	Windsor, Ont.	April 1, 1919	Mrs. A. Lackner	Mrs. L. Bright.
Trail Branch of the Great War Veterans' Association of Canada.	Trail, B.C.	April 1, 1919	James Hanna	John Miller.

have the honour to be, Sir,
Your obedient servant,
THOMAS MULVEY,
Under-Secretary of State.

List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act, for the year ended March 31, 1918, received in the Department of the Secretary of State up to and including March 31, 1919.

The total number of companies which have submitted the summary prescribed by Section 106 of the Companies Act for the fiscal year ended March 31, 1918, up to and including March 31, 1919, is 1,590.

Approximately 8,600 companies had been incorporated under Dominion laws to March 31, 1918, of which it is estimated that probably 50 per cent are defunct. After due allowance is made for those companies (mainly railways, banks, and insurance companies) which are not required to make the return, re-incorporations, etc., it is obvious that a considerable number are evading the law, notwithstanding the penalties provided by the Act.

In a few cases the reason advanced for not submitting the return has been that forms had not been received. This excuse, however, is not a tenable one, as the Act does not require companies to be notified to comply with the law, nor does it require forms to be sent. Forms, however, are mailed by this department, prior to June 1, to all names appearing on the list, and further copies may be obtained upon request.

Considerable correspondence has resulted owing to summaries having been submitted in an incomplete state, and it should here be pointed out that definite replies are required to be made to all sections of the return. If any question thereon is not applicable, an answer should be clearly made accordingly.

The fee, which is based upon the authorized capital (not the paid-up capital) of the company, is payable with, and should accompany, each annual return. Much correspondence also has been occasioned by this regulation in many instances not having been complied with.

Companies delinquent in submitting the summary should comply with the requirements of the Act, which provides a penalty of twenty dollars per day for default in forwarding it to this department. Every director and manager of a company who knowingly and wilfully authorizes or permits such default is also liable to the penalty, which may be recovered on summary conviction.

Furthermore, subsection (8) of Section 106 of the Act states that the name of a company which, for three consecutive years, has omitted to submit the return may be given in whole or in part to a new company, subject to certain provisos.

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Abitibi Power & Paper Co., Ltd	Montreal, Que	7,000,000	5,000,000	1,000,000	6,500,000 00	6,753,500 00
Accounting & Tabulating Corp., Ltd	"	4,500,000	3,500,000	1,000,000		
Ackerman (B. F.) Son & Co., Ltd	Peterboro, Ont	500,000	350,000			
Acme Glove Works, Ltd	Montreal, Que	1,000,000	450,000	200,000		
Acme Laboratories, Ltd	Toronto, Ont	50,000	39,500			
Acme Vacuum Cleaner Co., Ltd	Montreal, Que	20,000	18,600			
Adams Bros. Harness Mfg. Co., Ltd	Toronto, Ont	375,000	374,500			
Advertising Service Co., Ltd	"	25,000	25,000			
Aetna Biscuit Co., Ltd	Montreal, Que	400,000	293,200			
Ahern Safe Co., Ltd	"	75,000	56,000			
Alabama Traction, Light & Power Co., Ltd	"	30,000,000	17,000,000	1,000,000	25,000,000 00	13,138,400 00
Alaska Bedding of Montreal, Ltd	"	500,000	328,300			
Alberta Flour Mills, Ltd	Calgary, Alta	5,000,000	408,300			
Alberta Pacific Grain Co., Ltd	"	3,000,000	1,400,000	1,250,000		
Albert Soaps, Ltd	Montreal, Que	200,000	156,200			
Albion Motor Car Co. of Canada, Ltd	"	75,000	15,000			
Alexander Building, Ltd	"	1,250,000	550,000	450,000	250,000 00	248,500 00
Alexander, (James) Ltd	"	250,000	50,000	40,000		
Allans, Ltd	"	50,000	25,000			
Allen & Cochrane, Ltd	Ottawa, Ont	250,000	100,000	129,600		
Allen Bros. Co., Ltd	Toronto, Ont	40,000	13,500	18,000		
Alliance Mfg. Co., Ltd	Montreal, Que	140,000	74,500			
Amalgamated Ammunition Machinery Co., Ltd	Toronto, Ont	500,000	180,000			

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List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$ cts.	$ cts.	$ cts.
Almonte Knitting Co., Ltd	Almonte, Ont	100,00	60,000	10,000		
Ambursen Hydraulic Construction Co., of Canada, Ltd	Montreal, Que	50,000	50,000			
American La France Fire Engine Co. of Canada, Ltd	Toronto, Ont	50,000	25,000			
American Linseed Co., Ltd	Winnipeg, Man	40,000	39,900			
American Machinists, Ltd	Montreal, Que	50,000	5,000			
Ames, Holden, McCready, Ltd	"	10,000,000	3,500,000	2,500,000	2,500,000 00	1,749,826 66
Amherst Central Shoe Co., Ltd	Regina, Sask	100,000	100,000			
Anderson (Geo.) & Co. of Canada, Ltd	Montreal, Que	10,000	10,000			
Anglins, Ltd	"	1,000,000	300,000	197,900		
Anglo-Canadian Factors, Ltd	"	10,000	1,000			
Anglo-Canadian Fisheries, Ltd	"	40,000	39,800			
Anglo-Canadian Leather Co., Ltd	"	5,000,000	1,000,000	2,404,700	750,000 00	427,000 00
Ardis Candy Co., Ltd	Ottawa, Ont	40,000	20,000	7,300		
Arena Gardens of Toronto, Ltd	Toronto, Ont	500,000	250,000	250,000	300,000 00	300,000 00
Argenteuil Lumber Co., Ltd	Morin Heights, Que.	90,000	40,000			
Armour Canadian Grain Co., Ltd	Winnipeg, Man	40,000	40,000			
Armstrong Cork & Insulation Co., Ltd	Montreal, Que	50,000	50,000			
Armstrong Whitworth of Canada, Ltd	"	2,000,000	2,000,000			
Arsenault & Plamondon, Ltd	"	25,000	16,900			
Asbestos Corporation of Canada, Ltd		7,000,000	3,000,000	4,000,000	5,000,00 00	3,000,000 00
Asch, Ltd	"	200,000	27,000	10,000		
Ashdown (J. H.), Hardware Co. Ltd	Winnipeg, Man	2,000,000	2,000,000		1,500,000 00	1,546,400 00
Asphalt & Supply Co., Ltd	"	50,000				
Associated Cement Co. (Canada), Ltd	Victorin, B.C	2,000,000	2,000,000			
Associates Securities, Ltd	Toronto, Ont	3,200,000	1,000	3,199,000	1,900,000	1,900,000 00
					£328,767.2.6	£328,767.2.6
Atikokan Iron Co., Ltd	Toronto, Ont	1,000,000	1,000,000		2,000,000 00	2,000,000 00
Atlantic Sugar Refineries, Ltd	Montreal, Que	6,500,000	3,500,000	2,500,000	2,000,000 00	1,750,000 00
Atlantic Underwear, Ltd	Moncton, N.B	500,000	240,000	200,000		
Atlas Asbestos Co., Ltd	Montreal, Que	70,000	40,000			
Atlas Construction Co., Ltd	"	100,000	50,000			
Atlas Elevator Co., Ltd	Winnipeg, Man	500,000	413,000			
Au Bon Marche Letendre, Ltd	Montreal, Que	700,000	700,000			
Auer Incandescent Light Mfg. Co	"	150,000	150,000			
Auger & Son, Ltd	Quebec, Que	100,000	75,600			
Autographic Register Co of Canada, Ltd	Montreal, Que	150,000	22,350	22,100		
Automatic Sprinkler Co. of Canada, Ltd	Toronto, Ont	150,000	41,000	48,300		
Automatic Telephone Mfg. Co. of Canada, Ltd	Winnipeg, Man	1,000,000	1,000,000			
Auto Sales Co. of Canada, Ltd	Toronto, Ont	250,000	81,200			
Automobile Accessories Co., Ltd	Montreal, Que	10,000	6,722,190			
Auto Strop Safety Razor Co., Ltd	Winnipeg, Man	20,000	20,000			
Ayer (A. A.) Co., Ltd	"	753,000	157,400	187,000	225,000 00	225,000 00
Ayers, Ltd	Lachute Mills, Que	800,000	500,000		225,000 00	225,000 00
Aylmer Shoe Co., Ltd	Aylmer, Ont	75,000	50,000	2,500		
Baile (Andrew), Ltd	Montreal, Que	200,000	113,000			
B.B.B. Co., (Canada) Ltd	"	250,000	176,000			
Bachelor Clothing Co., Ltd	Sherbrooke, Que	20,000	2,000			
Baker (Walter) & Co. of Canada, Ltd	Montreal, Que	50,000	50,000			
Ball Furniture Co., Ltd	Hanover, Ont	125,000	70,700			
Bankers Realty, Ltd	Montreal, Que	100,000	10,000			
Barber-Ellis, Ltd	Toronto, Ont	500,000	264,400	30,000		
Barcelona Traction, Light & Power Co., Ltd	"	42,500,000	27,450,000	8,483,500	£14,500,000	£10,823,000
Barnett McQueen Co., Ltd	Fort William	240,000	183,000			
Barrett Co., Ltd	Montreal, Que	500,000	449,800			
Barrymore Cloth Co., Ltd	Toronto, Ont	1,000,000	413,200	155,300		
Barsalou (J) & Co., Ltd	Montreal, Que	175,000	175,000			
Bartram & Ball, Ltd	"	40,000	7,700			
Bate (H. N.) & Sons, Ltd	Ottawa, Ont	500,000		256,600		
Bathurst Lumber Co., Ltd	Bathurst, N.B	5,000,000	3,090,100		1,000,00) 00	1,000,000 00
Baxter (J. R.) & Co. Ltd	Montreal, Que	75,000	20,300			
Bayley's Limited	Sherbrooke, Que	100,000	95,000			
Beach Motors, Ltd	Ottawa, Ont	100,000	32,300			
Beare (S.B.), Ltd	Toronto, Ont	50,000	39,800			
Beaver BoardTimber Co., Ltd	"	50,000	45,500			
Beaver Co., Ltd	Ottawn, Ont	2,000,000	599,300	2 53,000		
Beaver Elevator Co., Ltd	Winnipeg, Man	99,000	40,000			
Beaver Lumber Co., Ltd	"	3,000,000	1,376,200	1,376,200		
Beck Mfg. Co., Ltd	London, Ont	400,000	400,000			
Beckwith Box Toe, Ltd	Sherbrooke, Que	25,000	25,000			
Belgo-Canadian Realty Co., Ltd	Montreal, Que	500,000	500,000			
Belding Paul Corticelli, Ltd	"	2,500,000	749,500	865,300	1,000,000 00	739,538
Bell (Duncan), Ltd	"	50,000		21,500		

List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Bell (J. & T.), Ltd	Montreal, Que	300,000	300,000		160,000 00	160,000 00
Bell (Wallace) Co., Ltd	"	45,000	30,000			
Benallack Lithographing & Printing Co., Ltd	"	400,000	191,900	36,400		
Benedict Proctor Mfg. Co., Ltd	Trenton, Ont	25,000	25,000			
Bennett, Ltd	Chambly Canton, Que	1,200,000	750,000	300,000	1,000,000 00	200,000 00
Bennett Lumber Co., Ltd	Montreal, Que	50,000	5,000			
Bennett Messecar Co., Ltd	Mille Roche, Ont	50,000	30,200			
Bennett Murtin Asbestos & Chrome Mines, Ltd	Thetford Mines, Que	1,500,000	1,500,000			
Benson & Hedges (Canada), Ltd	Montreal, Que	500,000	150,000	150,000		
Berliner Gramophone Co., Ltd	Montreal, Que	10,000	10,000			
Bermuda Bunkering Co., Ltd	Toronto, Ont	30,000	30,000			
Bertram (John) & Sons Co., Ltd	Dundas, Ont	600,000	400,000	200,000		
Birks Corner & Co., Ltd	Montreal, Que	100,000	60,000			
Birks (Henry) & Sons, Ltd	"	2,000,000	1,331,000			
Birmingham Montreal Realty Co., Ltd	"	50,000	10,900			
Bissell Carpet Sweeper Co., of Canada Ltd	Niagara Falls, Ont	100,000	80,000			
Biton (Walter) Co., Ltd	Toronto, Ont	40,000	22,000			
Black Lake Asbestos & Chrome Co., Ltd	"	4,000,000	3,000,000	1,000,000	1,500,000 00	1,191,500 00
Blaiklock Bros., Ltd	Montreal, Que	100,000	58,700			
Blair Engineering Co. of Canada, Ltd	"	100,000	100,000			
Blair's, Ltd	Ottawa, Ont	50,000	50,000			
Bleury Investment Co., Ltd	Montreal, Que	125,000	78,500			
Blue River Lumber Co., Ltd	Riviere Bleue, Que	100,000	100,000			
Blue (Walter) & Co., Ltd	Sherbrooke, Que	250,000	250,000			
Bogue Bros. & Henry, Ltd	Montreal, Que	50,000	11,500			
Boivin Wilson & Co., Ltd	"	1,000,000	100,000			
Bonner Heddle Co., Ltd	St. Catharines, Ont	100,000	67,000			
Bonner Sand & Ballast, Ltd	Montreal, Que	50,000	25,000			
Booth Fisheries Co., of Canada, Ltd	Toronto, Ont	1,000,000	350,500			
Borden's Condensed Milk Co., Ltd	"	5,000	5,000			
Borden's Farm Products Co., Ltd	"	275,000	275,000			
Borden Milk Co., Ltd	"	1,000,000	1,000,000			
Borgfelt (Geo.) & Co., Ltd	"	50,000	50,000			
Boulter, Waugh, Ltd	Montreal, Que	400,000	130,000	200,000		
Boureier (J. O.) Ltd	"	200,000	100,000	100,000		
Boxer (Reg. N.) Co., Ltd	Toronto, Ont	250,000	151,000			
Boyd (W. T. C.) Co., Ltd	"	150,000	150,000			
Brading Breweries, Ltd	Ottawa, Ont	250,000	188,000	39,000	100,000 00	100,000 00
Brandram-Henderson, Ltd	Montreal, Que	1,750,000	970,000	500,000	500,000 00	500,000 00
Brazeau Collieries, Ltd	Toronto, Ont	4,000,000	4,000,000		3,500,000 00	1,842,000 00
Brazilian Traction, Light & Power Co., Ltd	"	120,000,000	106,470,800	10,000,000		
Bremner (Alex.) Ltd	Montreal, Que	200,000	200,000			
Bremner (Douglas) & Co., Ltd	"	50,000	14,000	6,000		
Brennan & Blauer, Ltd	"	40,000	19,000			
Brinton Carpet Co., Ltd	Peterborough, Ont	350,000	350,000			
British American Bank Note Co., Ltd	Ottawa, Ont	500,000	300,000	200,000		
British American Nickel Corp., Ltd	Deschenes, Que	20,000,000	20,000,000		16,000,000 00	9,500,000 00
B.C. Milk Condensing Co., Ltd	Toronto, Ont	120,000	500			
British Columbia Timbers, Ltd	Montreal, Que	370,000	169,500		100,000	
British Empire Grain Co., Ltd	Winnipeg, Man	500,000	127,250	127,250		
British Forgings, Ltd	Toronto, Ont	50,000	50,000			
British Molybdenite, Ltd	"	100,000	43,931			
Brock (W. R.) Co., Ltd	"	2,000,000	1,077,100			
Brodeur, Ltd	Montreal, Que	49,000	5,000			
Brodie & Harvie, Ltd	"	50,000	50,000			
Brodies, Ltd	"	100,000	100,000			
Brompton Pulp and Paper Co., Ltd	"	9,000,000	7,000,000	2,000,000	2,000,000	1,685,000
Bromsgrove (The) Guild, Canada, Ltd	"	100,000	43,200	27,000		
Bronson Co	Ottawa, Ont	300,000	300,000			
Brosseau (D.C.) & Co., Ltd	Montreal, Que	190,000	51,100	6,100		
Brown (D. F.) Paper Box and Paper Co., Ltd	St. John, N.B	9,000	9,000			
Brown (Foster) Co., Ltd	Montreal, Que	20,000	20,000			
Brown House Furnishing Co., Ltd	"	20,000	2,500			
Brown Optical Co., Ltd	"	35,000	9,600			
Bruneau Currie & Co., Ltd	"	100,000	30,100			
Brunet (J.) Ltd	"	100,000	55,000			
Brunner Mond, Canada, Ltd	Toronto, Ont	3,000,000	2,250,000			
Buck (William) Stove Co., Ltd	Brantford, Ont	435,000	435,000			
Budge Carbon Paper Mfg. Co., Ltd	Montreal, Que	200,000	100,400			
Burlington Rapid Transit and Motor Mfg. Co., Ltd	Hamilton, Ont	50,000	5,400			
Burns (P.) & Co., Ltd	Calgary, Alta	10,000,000	4,000,000		2,500,000	2,500,000

List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Burns (P.) Coal Mines, Ltd	Calgary, Alta	2,000,000	2,000,000			
Burns (Wm. J.) International Detective Agency of Canada, Ltd.	Montreal, Que	10,000	5,000			
Burroughs Adding Machine of Canada, Ltd.	Windsor, Ont	250,000	250,000			
Burrow, Stewart & Milne Co. Ltd.	Hamilton, Ont	500,000	363,400			
Burrows Refining Co., Ltd	Ottawa, Ont.	1,500,000	1,500,000			
Bush (W. J.) & Co., (Canada) Ltd.	Montreal, Que	40,000	40,000			
Cadillac Motors, Ltd.	Montreal, Que.	50,000	25,000			
Cadomin Coal Co., Ltd.	Winnipeg, Man.	2,000,000	1,500,000			
Caledonia Springs Co., Ltd.	Montreal, Que.	200,000	105,000			
Calgary Brewing and Malting Co., Ltd.	Calgary, Alta.	2,000,000	1,500,000		1,700,000	1,700,000
Calgary Water Power Co., Ltd	"	100,000	100,000			
Cameron (J. R.) Ltd.	Ottawa, Ont.	50,000	18,000			
Campbell Lumber Co., Ltd	Weymouth, N.S	75,000		75,000	50,000	5,000
Campbell, MacLaurin Lumber Co., Ltd	Montreal, Que.	250,000	155,600			
Campbell Mfg. Co., Ltd	"	150,000	75,000			
Campbell Steel and Iron Works, Ltd	Ottawa, Ont.	100,000	36,500			
Canada Atlantic Grain Co., Ltd.	Winnipeg, Man.	100,000	100,000			
Canada Axe and Harvest Tool Mfg. Co., Ltd	Montreal, Que.	100,000	100,000			
Canada Bond Corporation, Ltd.	Toronto, Ont.	2,000,000	441,400			
Canada Casing Co., Ltd.	Montreal, Que.	200,000	200,000			
Canada Cement Co., Ltd	Montreal, Que.	30,000,000	13,500,000	10,500,000	8,000,000	8,000,000
Canada Chemical Co., Ltd	Toronto, Ont.	300,000	114,100			
Canada Cloak Co., Ltd	Toronto, Ont.	100,000	98,600			
Canada Coke Corporation, Ltd.	Montreal, Que.	50,000	50,000			
Canada Cold Storage Co., Ltd	Montreal, Que.	500,000	250,000	250,000	300,000	300,000
Canada Decalcomania Co., Ltd.	Toronto, Ont.	100,000	49,800			
Canada Flour Mills Co., Ltd	Chatham, Ont.	145,000	120,600			
Canada Foundries and Forgings, Ltd.	Brockville, Ont.	4,000,000	960,000	960,000	750,000	315,600
Canada Furniture Manufacturers, Ltd	Woodstock, Ont.	3,000,000	534,500	1,019,400	1,000,000	3,500
Canada Grip Nut Co., Ltd	Montreal, Que.	250,000	144,400			
Canada Iron Foundries, Ltd.	"	4,500,000	1,800,000	2,200,000	4,893,334	3,536,1203
Canada Landed and National Investment Co, Ltd	Toronto, Ont.	4,000,000	2,410,000		9,640,000	3,908,453 4
Canada, Light, Heat and Welding Co., Ltd	Calgary, Alta.	1,000,000	513,100			
Canada Linseed Oil Mills, Ltd	Montreal, Que.	500,000	500,000			
Canada Loose Leaf Co., Ltd	"	32,200	32,200			
Canada Machinery Corporation, Ltd	Galt, Ont.	2,000,000	1,177,500	602,450	1,000,000 00	301,750 00
Canada Maple Exchange, Ltd	Montreal, Que.	60,000	19,000	19,000		
Canada Needle and Fishing Tackle Co., Ltd	Toronto, Ont.	50,000	15,000			
Canada Office Furniture Co., Ltd	Montreal, Que.	35,000	28,100			
Canada Paper Co., Ltd	Montreal,, Que.	1,000,000	588,600	344,100	150,000 00	150,000 00
Canada Pole and Shaft Co., Ltd	Merritton, Ont.	400,000	274,200			
Canada Printing Ink Co., Ltd.	Toronto, Ont.	60,000	49,300			
Canada Publishing Co., Ltd	"	150,000	84,000			
Canada Railway News Co., Ltd	"	50,000	50,000			
Canada Rooling and Paving Co., Ltd.	Montreal, Que.	50,000	10,500			
Canada Steel Goods Co., Ltd	Hamilton, Ont.	600,000	222,500	169,000		
Canada Stove and Foundry Co., Ltd.	Ville St. Laurent, Que.	1,500,000	1,500,000		1,500,000 00	991,995 00
Canada Sugar Refining Co., Ltd	Montreal, Que.	1,000,000	1,000,000			
Canadian and General Finance Co., Ltd	Toronto, Ont.	250,000	125,000			
Canadian Advertising Agency, Ltd	Montreal, Que.	250,000	125,000	89,900		
Canadian Aladdin Co., Ltd	Toronto, Ont.	250,000	106,500			
Canadian Aloxite Co., Ltd	Niagara Falls, Ont.	100,000	100,000			
Canadian American Art Works, Ltd.	Montreal, Que.	10,000	1,000			
Canadian American Grain, Ltd.	Montreal, Que.	100,000	100,000			
Canadian American Lumber & Mfg. Co., Ltd	Toronto, Ont.	5,000	850			
Canadian Ammonia Co., Ltd	Toronto, Ont.	100,000	100,000			
Canadian Anthracite Coal Co., Ltd	Ottawa, Ont.	1,000,000	710,600			
Canadian Appraisal Co., Ltd	Montreal, Que.	100,000	68,800	31,200		
Canadian Bag Co., Ltd	"	1,000,000	400,000	317,000	500,000 00	224,000 00
Canadian Bond Crown Co., Ltd	"	200,000	200,000			
Canadian Bond Hanger and Coupling Co., Ltd	Alexandria, Ont.	45,000	29,500			
Canadian Brake Shoe Co., Ltd.	Sherbrooke, Que.	390,000	187,000	49,400	50,000	43,500
Canadian Bridge Co., Ltd	Walkerville, Ont.	2,000,000	994,000			
Canadian Briscoe Motor Co., Ltd	Brockville, Ont.	200,000	100,000	100,000		
Canadian Bronze, Ltd	Montreal, Que.	2,000,000	1,000,000	1,000,000		
Canadian Bronze Powder Works, Ltd.	Montreal, Que.	500,000	500,000			
Canadian Canoe Co., Ltd	Peterborough, Ont	20,000	15,000			
Canadian Car and Foundry Co., Ltd	Montreal, Que.	12,500,000	4,975,000	7,500,000	7,500,000 00	6,100,000 00
Canadian Carbonate Co., Ltd.	"	305,100	305,100			

LIST of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Canadian Cartage and Storage Co., Ltd.	Montreal, Que.	500,000	50,000			
Canadian Chewing Gum Co., Ltd	Toronto, Ont.	1,000,000	1,000,000			
Canadian Chicago Bridge and Iron Co., Ltd	Bridgeburg, Ont.	100,000	100,000			
Canadian Collapsible Tube Co., Ltd	Toronto, Ont.	100,000	35,700	19,500		
Canadian Collieries (Dunsmuir) Ltd.	Victoria, B.C.	15,000,000	10,000,000	5,000,000	12,433,360 00	10,000,026 67
Canadian Comstock Co., Ltd.	Montreal, Que.	40,000	40,000			
Canadian Connecticut Cotton Mills, Ltd.	Sherbrooke, Que.	1,750,000	1,000,000	457,200	350,000 00	350,000 00
Canadian Consolidated Felt Co., Ltd.	Montreal, Que.	2,000,000	1,500,000	500,000	500,000 00	406,500 00
Canadian Consolidated Rubber Co., Ltd.	"	6,000,000	2,805,500	3,000,000	13,100,000 00	9,635,000 00
Canadian Consolidated Underwriters, Ltd.	Toronto, Ont.	500,000	50,000			
Canadian Consumers Casein Co. Ltd	"	50,000		10,000		
Canadian Converters Co., Ltd.	Montreal, Que.	3,000,000	1,733,500		750,000 00	399,000 00
Canadian Co-Operative Wool Growers, Ltd.	Toronto, Ont.	200,000	73,530			
Canadian Domestic Engineering Co., Ltd.	"	50,000	23,000			
Canadian Elevator Co., Ltd.	Winnipeg, Man.	3,000,000	500,000	500,000		
Canadian Elgin Watch Co., Ltd	Toronto, Ont.	40,000	4,000			
Canadian Equipment Co., Ltd	Montreal, Que.	50,000	25,000			
Canadian Explosives, Ltd.	"	15,000,000	7,589,300	4,650,000	2,000,000 00	None outstanding.
Canadian Fairbanks Morse Co., Ltd.	"	3,100,000	1,600,000	1,500,000		
Canadian Fire Hose Co., Ltd.	"	40,000	20,000			
Canadian General Fire Extinguisher Co., Ltd	Toronto, Ont.	100,000	100,000			
Canadian Gold Car Heating and Lighting Co., Ltd.	Montreal, Que.	300,000	300,000			
Canadian H. W. Gossard Co., Ltd.	Toronto, Ont.	125,000	125,000			
Canadian Horse Shoe Co., Ltd.	Hamilton, Ont.	300,000	200,000	46,400	500,000 00	50,000
Canadian Hospital Supply Co., Ltd.	Montreal, Que.	75,000	25,000	10,200		
Canadian Ice Co., Ltd.	"	500,000	126,100		92,500 00	92,500 00
Canadian Incinerator and Furnace Co., Ltd.	Toronto, Ont.	50,000	48,500			
Canadian Ingersoll Rand Co., Ltd	Montreal, Que.	2,000,000	1,300,000			
Canadian I. P. Morris Co., Ltd.	Toronto, Ont.	40,000	4,000			
Canadian Jewellers, Ltd.	Montreal, Que.	5,000,000	671,000	661,000	150,000 00	104,900
Canadian K. K. Co., Ltd.	Elora, Ont.	40,000	22,500			
Cannadian Kellogg Co., Ltd.	Montreal, Que.	25,000	2,500			
Canadian Lamp and Stamping Co., Ltd.	Ford, Ont.	100,000	61,600			
Canadian Land and Investment Co., Ltd	Toronto, Ont.	100,000	100,000		6,000,000 00	
Canadian Laundry Machinery Co., Ltd	"	150,000	150,000			
Canadian Linotype Ltd.	"	49,900	49,900			
Canadian Locomotive Co., Ltd.	Kingston, Ont.	3,500,000	2,000,000	1,500,000	2,000,000 00	1,500,000 00
Canadian Lumber Yards, Ltd.	Montreal, Que.	1,000,000	1,000,000			
Canadian Malleable Iron Co., Ltd	Owen Souad, Ont.	150,000	117,800			
Canadian Matthews Gravity Carrier Co., Ltd.	Toronto, Ont.	100,000	60,000			
Canadian Meter Co., Ltd.	Hamilton, Ont.	200,000	200,000			
Canadian Metropolis Realty Co., Ltd.	Montreal, Que.	100,000	10,000			
Canadian National Carbon Co., Ltd.	Toronto, Ont.	30,000 shares without nominal or par value.	6,000 shares			
Canadian Northern Montreal Land Co., Ltd.	Montreal, Que.	2,500,000	2,500,000			
Canadian Nursery Co., Ltd.	"	45,000	22,500	22,500		
Canadian Pacific Car and Passenger Transfer Co., Ltd.	Prescott, Ont.	80,000	80,000			
Canadian Panama Hat Co., Ld.	Toronto, Ont.	10,000	10,000			
Canadian Pipe Organ Co., Ltd.	St. Hyacinthe, Que.	50,000	38,700			
Canadian Pneumatic Tool Co., Ltd.	Montreal, Que.	150,000	150,000			
Canadian Potato Machinery Co., Ltd.	Galt, Ont.	25,000	25,000			
Canadian Press Ltd.	Toronto, Ont.	10,000	10,000			
Canadian Reduction and Mining Co., Ltd.	Montreal, Que.	200,000	35,000			
Canadian Rock Drill Co., Ltd	Toronto, Ont.	50,000	50,000			
Canadian Roofing Mfg. Co., Ltd.	Windsor, Ont.	100,000	49,000			
Canadian Rubber Co., of Montreal, Ltd.	Montreal, Que.	2,000,000	2,000,000			
Canadian Salt Co., Ltd.	Windsor, Ont.	800,000	800,000		400,000 00	400,000 00
Canadian Sand and Gravel Co. Ltd.	Thorold, Ont.	100,000	60,000			

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LIST of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Canadian Sand Blast Co., Ltd.	Montreal, Que.	50,000	48,000			
Canadian Shovel and Tool Co., Ltd.	Hamilton, Ont.	500,000	290,000			
Canadian Siegwart Benm Co. Ltd.	Montreal, Que.	250,000	137,800			
Canadina S. K. F. Co. Ltd	Toronto, Ont.	50,000	50,000			
Canadian Steel Corporation, Ltd.	Ojibway, Ont.	20,000,000	2,000,000			
Canadian Stewart Co., Ltd.	Montreal, Que.	100,000	100,000			
Canadian Street Car Advertising Co. Ltd.	"	250,000	250,000			
Canadian Symphonola Co., Ltd.	Toronto, Ont.	50,000	15,000	16,100		
Canadian Tie and Lumber Co. Ltd.	"	150,000	150,000			
Canadina Transfer Co., Ltd	Montreal, Que.	500,000	100,000			
Canadian Traylor Engineering and Mfg. Co., Ltd.	Montreal, Que.	5,000	5,000			
Canadian Tungsten Lamp Co. Ltd.	Hamilton, Ont.	300,000	231,000		80,000 00	80,000 00
Canadian Vickers, Ltd	Montreal, Que.	5,000,000	5,000,000		4,866,666 66	4,866,666 66
Canadian Wallboard Co., Ltd.	Toronto, Ont.	50,000	5,000			
Canadian Warren Axe and Tool Co., Ltd.	St. Catharines, Ont.	150,000	150,000			
Canadian Western Lumber Co., Ltd.	Fraser Mills, B.C.	15,500,000	15,500,000		2,768,627 00	2,768,627 00
Canadian Westinghouse Co. Ltd.	Hamilton, Ont.	10,000,000	6,229,400			
Canadina Wm. A. Rogers, Ltd	Toronto, Ont.	1,000,000	500,000	500,000		
Canadian Woodworking Co. Ltd.	Yarmouth, N.S.	40,000	40,000			
Canadian Yale & Towne, Ltd.	St. Catharines, Ont	500,000	400,000			
Canmore Coal Co., Ltd	Canmore, Alta.	50,000	50,000			
Cape, (E. G. M.) & Co. Ltd.	Montreal, Que.	500,000	150,000			
Capitol Blend Tea Co., Ltd.	Ottawa, Ont.	100,000	30 000			
Capp (T. W.) Co., Ltd	Toronto, Ont.	40,000	4,000			
Carillon Construction and Development Co., Ltd	Montreal, Que.	50,000	50,000			
Carling Brewing and Malting Co., Ltd	London, Ont.	200,000	200,000			
Carnefac Stock Food Co., Ltd.	Winnipeg, Man.	200,000	130,000			
Caron Freres, Ltd.	Hull, Que.	47,000	47,000			
Carreras & Marcianus of Canada, Ltd	Montreal, Que.	250,000	200,000			
Carriage Factories, Ltd.	Toronto, Ont.	4,000,000	1,200,000	1,200,800	1,000,000 00	500,000 00
Carroll-Wilson, Ltd.	Edmonton, Alta.	300,000	32,000	100,000		
Carruthers (James) & Co., Ltd.	Montreal, Que.	100,000	100,000			
Carswell Co. Ltd	Toronto, Ont.	180,000	160,000	20,000		
Carter White Lead Co. of Canada, Ltd	Montreal, Que.	475,000	318,200			
Case (J. I.) Co. Ltd.	Toronto, Ont.	5,000	600			
Cassidy's, Limited	Montreal, Que.	10,000,000	2,500,000	3,094,100		
Castle Blend Tea Co., Ltd	Montreal, Que.	100,000	90,150			
Castle (F. J.) Co., Ltd	Ottawa, Ont.	145,000	105,200			
Catalonian Land Co., Ltd.	Toronto, Ont.	100,000	100,000		100,000 00	100,000 00
Caulk (L. D.) Co. of Canada, Ltd.	"	40,000	40,000			
Cavanagh (E.) Co., Ltd.	Montreal, Que.	100,000	62,500			
Cavendish Realty Co., Ltd	Montreal, Que.	150,000	80,500			
Cedar Rapids Transmission Co., Ltd.	Toronto, Ont.	1,000,000	1,000,000			
Central Engineering Co., Ltd	Montreal, Que.	25,000	21,000			
Central Grain Co., Ltd.	Winnipeg, Man.	400,000	200,000			
Central Press Ageney, Ltd.	Toronto, Ont.	100,000	87,600			
Chalmers Motor Car Co. of Canada, Ltd	Ford, Ont.	1,000,000	355,000			
Chamberlain & Hookham Meter Co., Ltd.	Toronto, Ont.	50,000	5,000			
Chaput (L.) Fils & Co., Ltd.	Montreal, Que.	1,000,000	900,000			
Charbonneau, Ltd	Montreal, Que.	300,000	180,700			
Charcoal Supply Co. of Quebec, Ltd.	Toronto, Ont.	25,000	25,000			
Chipman (Canada), Ltd.	Montreal, Que.	50,000	50,000			
Chontales Mines, Ltd.	"	700,000	656,250			
Choquette (J.P.) Ltd	"	150,000	75,000			
Christie Clothing Co., Ltd.	"	40,000	23,300			
Christin (J.) & Co., Ltd.	"	50,000	50,000			
Church & Church, Ltd	"	20,000	13,000			
Church & Dwight, Ltd.	"	50,000	50,000			
Church Ross & Co., Ltd.	"	50,000	30,500			
Citizens Lumber Co., Ltd.	Winnipeg, Man.	100,000	100,000			
City Ice Co., Ltd.	Montreal, Que.	700,000	431,100	50,000		
Clinman Waterproof, Ltd.	"	50,000	42,200			
Clark (Ed.) & Sons, Ltd.	Toronto, Ont.	500,000	300,000			
Clark (W. E.) Ltd.	"	40,000	37,900			
Clark (J. F.) Ltd	Montreal, Que.	200,000	75,500		90,000 00	90,000 00
Clare Brothers & Co., Ltd.	Preston, Ont.	290,000	285,000			
Cleveland Pneumatic Tool Co. of Canada, Ltd.	Toronto, Ont.	7,500	7,500			
Clubb (A.) & Sons, Ltd.	Toronto, Ont.	250,000	68,500			
Cluff Ammunition Co. Ltd.	Toronto, Ont.	1,500,000	600,000			
Cobourg Dyeing Co., Ltd.	Cobourg, Ont.	190,000	100,000	80,900		
Cobourg Mattting and Carpet Co. Ltd.	Cobourg, Ont.	300,000	130,000	75,400		
Coastal Syndicate, Ltd	Toronto, Ont.	25,000	25			

List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Coglin (B. J.) Co. Ltd	Montreal, Que.	200,000	82,200	54,000		
Cohen (J.) & Sons, Ltd	"	100,000	15,100			
Colborne Realties, Ltd	Montreal, Que.	100,000	99,500			
Cole (C. F.) Co., Ltd	Toronto, Ont.	50,000	48,000			
Cole (Geo. W.) Ltd	"	50,000	4,800			
Coleman & Co. (Canada), Ltd	"	50,000	40,000			
Colgate & Co., Ltd	Montreal, Que.	25,000	25,000			
College Brand Clothes Co., Ltd	"	50,000	49,490			
Collingwood Shipbuilding Co. Ltd	Collingwood, Ont	2,600,000	2,600,000		1,950,000 00	1,950,000 00
Colonial Fastener Co., Ltd	Montreal, Que.	20,000	20,000			
Colonial Lumber Co., Ltd	Pembroke, Ont.	349,000	349,000			
Colonial Supplies, Ltd	Montreal, Que.	50,000	49,500			
Columbia Handle and Lumber Co., Ltd	London, Ont.	100,000	40,000			
Columbia River Lumber Co., Ltd	Toronto, Ont.	5,500,000	3,000,000	2,500,000	£1,000,000	£1,000,000
Columbia Western Lumber Yards, Ltd	"	5,000,000	2,499,950	2,499,952 43		
Columbus Rubber Co. of Montreal, Ltd	Montreal, Que.	400,000	300,000	100,000		
Comet Motor Co., Ltd	"	250,000	75,000	50,000		
Commercial Chambers Realty Co., Ltd	Ottawa, Ont.	48,000	48,000			
Commercial Motor Bodies and Carriages, Ltd	Guelph, Ont.	40,000	40,000			
Commercial Securities Corporation, Ltd	Montreal, Que.	200,000	153,000			
Commercial Twine Co., Ltd	"	10,000	10,000			
Confederation Construction Co., Ltd	Thorold, Ont.	2,000,000	2,000,000			
Conger Lehigh Coal Co., Ltd	Toronto, Ont.	500,000	500,000		400,000 00	200,000 00
Coniagas Reduction Co., Ltd	St Catharines, Ont	250,000	250,000			
Consolidated Elevator Co., Ltd	Winnipeg, Man	750,000	651,200		350,000 00	350,000 00
Consolidated Lithographing and Mfg. Co. Ltd	Montreal, Que.	250,000	115,000	81,000		
Consolidated Mining and Smelting Co. of Canada, Ltd	Toronto, Ont.	15,000,000	10,477,450			
Consolidated Plate Glass Co. of Canada, Ltd	"	500,000	250,000			
Consolidated Realty Co., Ltd	Montreal, Que.	500,000	492,100			
Consumers Cordage Co. Ltd	Montreal, Que.	1,000,000	434,700	423,200		
Consumers Gasoline Supply Co. Ltd	Toronto, Ont.	50,000	30,000			
Consumers Glass Co. Ltd	Montreal, Que.	1,000,000	75,600	500,000		
Continental Oil Co. Ltd	Winnipeg, Man	500,000	150,000			
Coombe (F. E.) Furniture Co. Ltd	Kincardine, Ont.	100,000	73,100			
Copeland Chatterson Crain, Ltd	Brampton, Ont.	1,000,000	403,800	206,700		
Copp Clark Co., Ltd	Toronto, Ont.	300,000	200,000	100,000		
Corby (H.) Distillery Co. Ltd	Montreal, Que.	1,500,000	600,000	135,400	300,000 00	300,000 00
Coristine (Jas.) & Co. Ltd	"	300,000	200,000			
Corneil (C. R.) Ltd	"	100,000	100,000			
Corporation Agencies, Ltd	"	50,000	49,600			
Corporation Estates, Ltd	"	200,000	134,700			
Corporation Real Properties, Ltd	"	100,000	100,000			
Cotton Threads, Ltd	"	200,000	20,000	130,000		
Cowan (John) Co. Ltd	"	45,000	27,600			
Cowichan Lumber Co. Ltd	Bobcaygeon, Ont	150,000	150,000			
Crain Printers, Ltd	Ottawa, Ont	100,000	40,750	24,300		
Crescent Machine Co., Ltd	Montreal, Que.	20,000	10,500			
Crescent Mfg. Co. Ltd	Toronto, Ont.	500,000	276,300			
Croft, Wm. & Sons, Ltd	"	400,000	351,500			
Crooks (Robert) Co. of Canada, Ltd	Montreal, Que.	50,000	50,000			
Cross Press and Sign Co. Ltd	Montreal, Que.	30,000	20,000			
Crown Lumber Co. Ltd	Calgary, Alta.	800,000	700,000			
Crowley Mfg. Co. Ltd	Toronto, Ont.	100,000	56,000			
Crows Nest Pass Coal Co., Ltd	"	10,000,000	6,216,666			
Crown Furniture, Ltd	Preston, Ont.	100,000	58,000			
Cummings (A.H.) & Son, Ltd	Coaticook, Que.	140,000	80,000			
Cummings Grain Co., Ltd	Calgary, Alta.	150,000	49,000			
Cunningham & Wells, Ltd	Montreal, Que.	250,000	50,000	129,600		
Currie (Wm.) Ltd	"	250,000	151,250			
Curtiss Aeroplanes & Motors, Ltd	Toronto, Ont.	50,000	50,000			
Cushing Brothers, Ltd	Calgary, Alta.	2,000,000	700,000	1,300,000		
Cushman Motor Works of Can., Ltd	Winnipeg, Man.	100,000	100,000			
D'Allaird Mfg. Co., Ltd	Montreal, Que.	50,000	29,000			
Dale & Co., Ltd	"	200,000	100,000	100,000		
Dalley (F. F.) Co., of Canada, Ltd	Hamilton, Ont.	100,000	100,000			
Dalley, F. F. Corporation, Ltd	Hamilton, Ont.	4,000,000	2,520,000	367,500		
Dalley Products, Ltd	"	100,000	100,000		300,000 00	37,000 00
Daly & Morin, Ltd	Lachine, Que.	500,000	150,000			
Daniels (Dr. A. C.) Co., of Canada, Ltd	Knowlton, Que.	10,000	10,000			
Dann Spring Insert, Ltd	Hamilton, Ont.	40,000	4,600			

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LIST of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Darling & Brady, Ltd	Montreal, Que.	100,000	25,000			
Darling Bros. Ltd	"	250,000	250,000			
Dartnell, Ltd	"	40,000	25,100			
Davidson (Thos.) Mfg. Co., Ltd	"	5,000,000	1,514,300		1,000,000 00	426,000 00
Davies, Irwin, Ltd.	"	50,000	30,000			
Davies (Wm) Co., Ltd	Toronto, Ont.	5,000,000	3,000,000		2,000,000	1,950,000 00
Davignon (J. & P.) Ltd	Montreal, Que	45,000	45,000		50,000	25,000 00
Davis (H. H.) & Co., Ltd	Yarmouth, N.S.	20,000	20,000			
Davis (S.) & Sons, Ltd	Montreal, Que.	1,000,000	1,000,000			
Dawson & Co., Ltd	"	75,000	72,700			
Dawson (Chas. F.) Ltd	"	50,000	50,000			
Dawson (W. V.) Ltd	"	300,000	200,000			
Deacon Shirt Co., Ltd	Belleville, Ont	200,000				
Deere (John) Plow Co. Ltd	Winnipeg, Man	500,000	500,000			
De Lavnl Co., Ltd	Peterborough, Ont	1,000,000	1,000,000			
Delany & Pettit, Ltd	Toronto, Ont.	300,000	200,000			
Delorme (Wilfrid) & Co., Ltd.	Montreal, Que.	40,000	25,000			
Demault Grain and Provision Co., Ltd.	Sherbrooke, Que.	150,000	93,000			
Denis Advertising Signs, Ltd	Montreal, Que	100,000	66,000			
Desjardins (Chas.) & Co., Ltd	"	250,000	250,000		125,000 00	125,000 00
Desmarais & Robitaille, Ltd.	"	190,000	170,000			
Desparois Garneau & Co., Ltd.	"	45,000	23,000			
Devins (R. J.) Ltd.	"	19,000	18,500			
Diamond Rubber Co., Ltd	Toronto, Ont.	10,000	500			
Diener Gas and Mfg. Co., Ltd.	Dunnville, Ont.	100,000	42,000	44,050		
Dillons, Ltd	Montreal, Que.	49,000	24,000	25,000		
Dixie Land Co., Ltd	"	50,000	40,600			
Dobell Coal Co., Ltd	Quebec, Que.	100,000	48,500			
Dodd-Simpson Press, Ltd.	Montreal, Que.	50,000	30,500	15,000		
Dodge Bros. Motor Co., Ltd	Windsor, Ont	100,000	500			
Dodge Mfg. Co., Ltd.	Toronto, Ont.	1,500,000	500			
Doherty Pianos Ltd	Clinton, Ont	200,000	100,000			
Dominion Automobile Co., Ltd.	Toronto, Ont.	100,000	95,500			
Dominion Barging Co., Ltd	Lachine, Que.	75,000	25,500			
Dominion Battery Co., Ltd	Toronto, Ont.	200,000	150,000			
Dominion Blank Book Co., Ltd.	Berthierville, Que.	150,000	75,000	67,500		
Dominion Bonded Legal Service, Ltd	Montreal, Que.	10,000	5,500			
Dominion Box and Package Co., Ltd	"	700,000	200,000	207,500		
Dominion Brake Shoe Co., Ltd	St Thomas, Ont.	500,000	500,000			
Dominion Bridge Co., Ltd	Montreal, Que.	10,000,000	6,500,000			
Dominion Canners, Ltd	Hamilton, Ont.	10,000,000	2,795,400	2,200,600	2,500,000 00	2,500,000 00
Dominion Cartridge Co., Ltd	Montreal, Que.	1,000,000	1,000,000			
Dominion Chain Co, Ltd	Niagara Falls, Ont	500,000	500,000			
Dominion Copper Products, Ltd.	Montreal, Que.	3,500,000	2,339,500			
Dominion Cord & Tassel Co., Ltd	Montreal, Que	100,000	99,000			
Dominion Corrugated Steel Pipe Co., Ltd	St. Johns, Que	20,000	20,000			
Dominion Crucible Co., Ltd	Montreal, Que	200,000	106,000			
Dominion Dredging Co., Ltd.	Ottawa, Ont	500,000	382,500			
Dominion Elevator Co., Ltd	Winnipeg, Man	500,000	337,000			
Dominion Equity & Securities Co., Ltd	Montreal Que	500,000	50,000		50,000 00	38,000 00
Dominion Fish Co. Ltd,	Toronto, Ont	200,000	100,000			
Dominion Flour Mills, Ltd	Montreal, Que	1,500,000	1,000,000		1,000,000 00	600,000 00
Dominion Foundries & Steel, Ltd	Hamilton, Ont	6,000,000	2,963,400	698,300		
Dominion Foundry Supply Co., Ltd	Montreal, Que	50,000	40,600			
Dominion Furniture Mfg. Co., Ltd	Ste. Therese de Blainville, Que.	100,000	73,000			
Dominion Glass Co., Ltd.	Montreal, Que	8,000,000	4,250,000	2,600,000	3,000,000 00	2,000,000 00
Dominion Ivory Co., Ltd	Toronto, Ont.	50,000	50,000			
Dominion Linens, Ltd	Guelph, Ont	550,000	200,000	325,000		
Dominion Linseed Oil Co., Ltd	Baden, Ont	500,000	439,000			
Dominion Metallurgical Co., Ltd	Toronto, Ont.	50,000 shares without nominal or par value	200 shares			
Dominion Mines & Quarries, Ltd	Toronto, Ont.	500,000	300,000			
Dominion Motor Car Co., Ltd	Montreal, Que	20,000	4,000			
Dominion Nut & Bolt Fastener Co., Ltd	"	150,000	150,000		120,000 00	120,000 00
Dominion Office Supply Co., Ltd	Walkerville, Ont.	25,000	5,350			
Dominion Oil Cloth Co., Ltd	Montreal, Que	3,500,000	975,000	850,000		
Dominion Optical Co Mfg., Ltd	"	50,000	18,500			
Dominion Paper Box Co., Ltd	Toronto, Ont.	395,000	107,900	135,500		
Dominion Park Co., Ltd	Montreal, Que	400,000	400,000		250,000 00	250,000 00
Dominion Power & Transmission Co., Ltd	Hamilton, Ont.	25,000,000	7,500,000	3,642,100	25,000,000 00	5,400,000 00
Dominion Produce Co., Ltd	Winnipeg, Man	100,000	28,300			
Dominion Properties, Ltd.	Montreal, Que	50,000	22,500			

List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized	Debeatures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Dominion Radiator Co., Ltd.	Toronto, Ont.	600,000	491,100			
Dominion Road Machinery Co., Ltd.	Goderich, Ont.	300,000	108,500		40,000 00	40,000 00
Dominion Rubber Co., Ltd	St. Jerome, Que.	120,000	120,000			
Dominion Steel Products Co., Ltd	Brantford, Ont.	1,000,000	862,500		500,000 00	500,000 00
Dominion Textile Co., Ltd.	Montreal, Que	10,000,000	5,000,000	1,940,600	3,267,500 00	3,267,500 00
Dominion Tire Co., Ltd.	Kitchener, Ont.	1,000,000	600,000			
Dominion Transport Co., Ltd.	Montreal, Que.	460,000	460,000			
Dominion Wire Rope Co., Ltd	"	500,000	500,000			
Donnelly (D.) Ltd	"	125,000	100,000		75,000 00	75,000 00
Dorval Island Park Co., Ltd.	"	200,000	139,800			
Dougall (C. H.) Ltd	"	25,000	2,400			
Dougall Varnish Co., Ltd	"	250,000	150,000	100,000		
Druggists Corporation of Canada, Ltd.	Toronto, Ont.	40,000	37,740	1,310		
Drummond, McCall & Co., Ltd	Montreal, Que.	1,000,000	200,000	800,000		
Drummond Mines, Ltd	"	100,000	100,000			
Drummondville Matches, Ltd.	Drummondville, Que.	100,000	76,100		25,000 00	25,000 00
Dryden (C. J.) Ltd	Montreal, Que	25,000	9,500			
Dufresne & Galipeau, Ltd.	"	250,000	66,700			
Dube Ltd.	"	14,500	14,500			
Dubrule Manufacturing Co., Ltd.	"	50,000	35,000			
Dufresne & Locke Ltd.	"	250,000	137,900			
Duncan Electrical Co., Ltd	"	150,000	100,500			
Dunn (Wm. H.) Ltd	"	100,000	33,900			
Dunning, (Geo. G.) Co., Ltd.	Toronto, Ont.	50,000	25,600			
Dupre (C.) & Co., Ltd.	"	40,000	25,000			
Dupuis Freres, Ltd	Montreal, Que	500,000	120,300		200,000 00	200,000 00
Dwyer Elevator Co., Ltd	Fort William, Ont.	250,000	174,100			
Eastern Canada Steel & Iron Works, Ltd.	Montreal, Que.	100,000	100,000			
Eagle Shoe Co., Ltd.	Quebec, Que.	200,000	120,000	80,000		
Eagle Smelting & Refining Works, Ltd	Montreal, Que.	40,000	9,600			
Eastern Equipment Co., Ltd.	"	50,000	40,000			
Eastern Cafeterias, Ltd.	Toronto, Ont.	150,000	91,040	44,900		
Eastern Hay & Feed Co., Ltd.	Sackville, N.B.	150,000	105,900			
Eaves (Edmund) Ltd.	Montreal, Que	90,000	72,700			
Ebro Irrigation & Power Co., Ltd.	Toronto, Ont.	2,500,000	2,500,000		£9,500,000	£9,500,000
Eclipse Rubber Co., Ltd	Montreal, Que	50,000	5,000			
Eclipse Umbrella Co., Ltd.	"	100,000	20,100			
Economy Fuse & Mfg. Co. of Canada, Ltd	"	5,000	5,000			
Eddy (E. B.) Co., Ltd.	Hull, Que.	300,000	300,000		1,000,000 00	600,000 00
Edge (W. G.) Ltd.	Ottawa, Ont.	100,000	100,000			
Edmunson Bates & Co., Ltd.	Toronto, Ont.	100,000	100,000			
Egan (G. C.) & Co., Ltd.	Montreal, Que	40,000	10,000			
Einstein (J) Ltd	"	25,000	25,000			
Elder Ebano Asphalt Co., Ltd.	"	500,000	200,100			
Electric Furnace Products, Ltd.	Toronto, Ont.	5,000,000	2,500,000			
Elkin (J) & Co., Ltd.	Montreal, Que.	100,000	100,000			
El Paso Milling Co., Ltd.	Toronto, Ont.	500,000	500,000			
Empire Coal Co., Ltd	"	500,000	250,000	250,000		
Empire Elevator Co., Ltd.	Winnipeg, Man.	2,000,000	500,000	500,000	375,000 00	375,000 00
Empire Flour Mills, Ltd	St. Thomas, Ont	500,000	193,800			
Empire Paper Box Co., Ltd.	Montreal, Que	49,000	30,000			
Empire Stove & Furnace Co., Ltd	Owen Sound, Ont.	100,000	32,200		50,000 00	19,200 00
Energite Explosives Co., Ltd.	Montreal, Que.	175,000	175,000		500,000 00	
Engineering & Machine Works of Canada, Ltd.	St. Catharines, Ont.	1,000,000	298,900			
Equipment Investment Co. of Canada, Ltd.	Toronto, Ont.	50,000	5,000			
Estabrooks (T. H.) Co., Ltd.	St. John, N.B	500,000	334,000			
Eureka Shoe Co., Ltd.	Three Rivers, Que	100,000	3,000	15,000	25,000 00	25,000 00
Evans Brothers, Ltd.	Montreal, Que.	50,000	50,000			
Evans & Co., Ltd	"	50,000	34,200			
Evans (The David) Shipping Co, Ltd.	Vancouver, B.C.	25,000	25,000			
Evans & Evans, Ltd	Montreal Que.	50,000	20,000			
Eveleigh (J.) & Co., Ltd.	"	275,000	200,000			
Ewing (Wm.) Co., Ltd	"	250,000	128,700			
Fairbanks (E. & T.) Co., Ltd.	Sherbrooke, Que	375,000	75,000	300,000	100,000 00	100,000 00
Fairbank (N. K.) Co., Ltd.	Montreal, Que.	500,000	500,000			
Fairhaven Transportation & Coal Co., Ltd	"	50,000	10,000			
Fairville Realty Co., Ltd	"	62,500	62,500			
Fancy Goods Co. of Canada, Ltd.	Toronto, Ont.	100,000	100,000			
Farand & Delorme, Ltd	Montreal, Que.	100,000	100,000		60,000 00	60,000 00
Farmers' Advocate of Winnipeg, Ltd.	Winnipeg, Man.	100,000	100,000			
Farmers' Club Elevator Co., Ltd	"	300,000	80,500			
Farmers' Club Grain Co., Ltd.	"	100,000	100,000			
Farmers' Supply Co., Ltd.	"	250,000	66,000			

SESSIONAL PAPER No. 29

List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Farrell Belisle & Co., Ltd	Montreal, Que	300,000	200,000	34,000		
Fashion Craft Mfrs., Ltd	"	1,000,000	14,000	359,800		
Fashion Hat Mfg. Co., Ltd	"	20,000	10,100			
Fassett Lumber Co., Ltd	Fassett, Que	1,000,000	622,800		300,000 00	300,000 00
Federal Coals, Ltd	Montreal, Que	200,000	200,000			
Federal Engineering & Contracting Co., Ltd	"	25,000	13,000			
Federal Paper Co., Ltd	"	100,000	50,000	38,200		
Federal Stone & Supply Co., Ltd	Ottawa, Ont	50,000	6,100			
Federated Shoe Service Co., Ltd	Quebec, Que	50,000	5,000			
Felson & Bernzweig Co., Ltd	Montreal, Que	40,000	40,000			
Filion & Freres, Ltd	"	49,000	29,300			
Financial Advertising Co. of Canada, Ltd	"	50,000	50,000			
Finger Lumber Co., Ltd	The Pass, Man	1,000,000	1,000,000			
Finnie & Murray, Ltd	Winnipeg, Man	300,000	68,000	115,100		
Fisher (John) & Son, Ltd	Dundas, Ont	200,000	133,500			
Fisher Motor Co., Ltd	Orillia, Ont	600,000	275,600	148,700	100,000 00	100,000 00
Fitzgibbon, Ltd	Montreal, Que	250,000	65,000	35,600		
Fleming (C. E.) Tie & Lumber Co., Ltd	Ottawa, Ont	100,000	51,500			
Flint Varnish & Colour Works of Canada, Ltd	Toronto, Ont	500,000	350,000			
Food Specialists of Canada, Ltd	Montreal, Que	50,000	45,500			
Foote (S. B.) Co., Ltd	"	100,000	60,000			
Ford Motor Co. of Canada, Ltd	Ford, Ont	10,000,000	7,000,000			
Forest Reserve Pulp & Paper Co., Ltd	Montreal, Que	1,000,000	400,500			
Fort William Elevator Co., Ltd	Winnipeg, Man	1,000,000	465,000		340,000 00	340,000 00
Fort William Grain Co., Ltd	Fort William, Ont	40,000	40,000			
Foss (Geo. F.) Machinery & Supply Co., Ltd	Montreal, Que	200,000	125,500			
Foundation (The) Co., Ltd	"	50,000	40,000			
Foundation Co. of British Columbia, Ltd	Victoria, B.C	30,000	13,500			
Fox & Morris, Ltd	Montreal, Que	50,000	30,300			
Fox Film Corporation, Ltd	"	40,000	10,000			
France & Canada Steamship Co., Ltd	"	1,000,000	700,000	300,000		
Franco-American Chemical Co., Ltd	"	50,000	30,000			
Frank Lime Co., Ltd	Winnipeg, Man	50,000	35,000			
Franke Levasseur & Co., Ltd	Montreal, Que	60,000	30,000			
Franklin Railway Supply Co. of Canada, Ltd	"	25,000	25,000			
Fraser & Chalmers of Canada, Ltd	"	100,000	100,000			
Fraser, Brace & Co., Ltd	"	100,000	10,500			
Fraser Viger & Co., Ltd	"	500,000	150,000			
Frasier Thornton & Co., Ltd	Cookshire, Que	150,000	50,000	100,000		
Freemans, Ltd	Montreal, Que	500,000	400,000			
Fremes (S.) & Co., Ltd	Toronto, Ont	40,000	40,000		25,000 00	25,000 00
Frid (George) Co., Ltd	Toronto, Ont	100,000	100,000			
Fried Grills Hat Co., Ltd	Guelph, Ont	150,000	88,600			
Frost Steel & Wire Co., Ltd	Hamilton, Ont	6,000,000	1,988,500	527,800		
Frothingham & Workman, Ltd	Montreal, Que	313,700	50,000	173,700	61,250 00	61,250 00
Fruit Machinery Co., Ltd	Belleville, Ont	40,000	40,000			
Fulford (G. T.) Co., Ltd	Toronto, Ont	1,000,000	1,000,000			
Fuller (Geo. A.) Co., Ltd	Montreal, Que	100,000	100,000			
Gale Bros., Ltd	Quebec, Que	250,000	25,000			
Gale (Geo.) & Sons, Ltd	Waterville, Que	500,000	200,000		200,000 00	200,000 00
Gale Mfg. Co., Ltd	Toronto, Ont	130,000	89,500			
Garden City Feeder Co., Ltd	Regina, Sask	100,000	26,500			
Gareau (I. O.) Ltd	Montreal, Que	200,000	150,000	12,100		
Garneau, Ltd	Quebec, Que	1,000,000	235,000	350,000		
Gartshore Thompson Pipe & Foundry Co., Ltd	Hamilton, Ont	600,000	240,000	360,000		
Gaudry (L. H.) & Co., Ltd	Quebec, Que	200,000	62,500			
Gault Brothers, Ltd	Vancouver, B.C	500,000	81,400	122,100		
Gault Brothers Co., Ltd	Montreal, Que	1,000,000	846,100			
Gault Realties, Ltd	"	500,000	100,000		1,150,000 00	1,150,000 00
Gaults, Ltd	Winnipeg, Man	750,000	315,200	192,600		
Gaunt (J. R.) & Son (Canada) Co., Ltd	Montreal, Que	49,975	29,975	775		
Gauthier & Co., Ltd	Ottawa, Ont	75,000	18,800			
Gauvreau, Beaudry, Ltd	Quebec, Que	750,000	353,800			
Gazette Printing Co., Ltd	Montreal, Que	500,000	251,000	74,500		
General Automobile Equipment Co., Ltd	"	50,000	20,000			
General Railway Signal Co. of Canada, Ltd	Lachine, Que	1,100,000	1,000,000	100,000	200,000 00	200,000 00
General Supply Co of Canada, Ltd	Ottawa, Ont	300,000	187,400			
Genin, Trudeau & Co., Ltd	Montreal, Que	300,000	200,000			
Gibb & Co., Ltd	Montreal, Que	50,000	50,000			

LIST of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Giddings, Limited	Granby, Que.	125,000	67,500			
Gillette Safety Razor Co., of Canada, Ltd	Montreal, Que.	2,000,000	2,000,000			
Gillies Bros., Ltd	Braeside, Ont.	2,500,000	1,000,000			
Girdwood-Lamb Motors, Ltd	Montreal, Que.	100,000	40,000			
Giscome Lumber Co., Ltd.	Giscome, B.C	1,000,000	323,500			
Glassford Bros., Ltd	Montreal, Que.	55,000	55,000			
Glassco (M.S.) Co., Ltd	Hamilton, Ont.	50,000		26,400		
Glendyne Slate & Roofing Co., Ltd	Richmond, Que.	100,000	45,600			
Globe Shoe, Ltd	Terrebonne, Que	100,000	20,000	20,000		
Glovers-Craft, Ltd.	Montreal, Ont	100,000	10,500	16,200		
Goldie (James) Co., Ltd	Guelph, Ont.	100,000	100,000			
Goldie & McCulloch Co., Ltd.	Galt, Ont.	700,000	700,000			
Goldsmiths Stock Co., of Canada, Ltd.	Toronto, Ont	250,000	150,000			
Gooderham & Worts, Ltd	"	2,000,000	2,000,000			
Goodhue (J. B.) Co., Ltd	Rock Island, Que.	100,000	35,000	29,000		
Goodhue (J. L.) & Co., Ltd	Danville, Que.	190,000	109,000			
Goodison (John) Thresher Co., Ltd	Sarnia, Ont.	1,000,000	225,000			
Governor Fastener Co., of Canada, Ltd.	Montreal, Que.	50,000	10,000	10,000		
Gowans Kent & Co., Ltd	Toronto, Ont.	500,000	500,000			
Gowans Kent Western, Ltd.	Montreal, Que.	99,900	99,900			
Graddon Lumber Co., Ltd	"	50,000	20,000			
Grahams, Ltd.	Belleville, Ont.	1,000,000	800,000			
Grain Growers Export Co., Ltd	Winnipeg, Man	1,500,000	600,000			
Granby Elastic Web Co., Ltd	Granby, Que	50,000	50,000			
Grand Trunk Pacific Elevator Co., Ltd	Winnipeg, Man	1,000,000	300,000			
Granda (Jose), Ltd.	Montreal, Que	250,000	98,400			
Grant Holden Graham, Ltd.	Ottawa, Ont.	100,000	76,900			
Gray (H.) & Co., Ltd.	Montreal, Que.	150,000	104,500	500		
Great Lakes Transportation Co., Ltd.	Midland, Ont.	1,000,000	504,000		140,000 00	140,000 00
Great West Coal Co., Ltd.	Brandon, Man	2,000,000	1,000,000			
Great West Saddlery Co., Ltd	Winnipeg, Man.	2,000,000	1,675,100			
Greenberg (Albert) Ltd	Montreal, Que.	50,000	15,000			
Greenshields, Ltd	"	1,500,000	450,000	650,000		
Gregg, (G. R.) Co., Ltd.	Toronto, Ont.	750,000	464,000			
Grenier Warrington Motor Co., Ltd	Montreal, Que.	50,000	24,000			
Grier (G. A.) & Sons, Ltd	"	500,000		300,100		
Grier Timber Co., Ltd	"	100,000	36,300			
Griffith-McNaughton, Ltd	Arnprior, Ont.	40,000	30,000			
Grimm Mfg. Co., Ltd	Montreal, Que	150,000	125,000			
Grimond, J. & A. D. (Canada) Ltd	Toronto, Ont.	50,000	25,010			
Grothe (L. O.) Ltd.	Montreal, Que	1,000,000	457,000	500,000		
Guaranty Plan, Ltd.	"	10,000	600			
Guelph Carriage Top Co., Ltd.	Guelph, Ont.	50,000	50,000			
Guillet (E) & Sons Co., Ltd	Marieville, Que.	150,000	150,000			
Gunn Richards, Ltd	Montreal, Que.	50,000	10,000			
Gunn Electric Co., Ltd.	"	20,000	2,000			
Gurd (Charles) & Co., Ltd	Montreal, Que	75,000	75,000			
Gurney Foundry Co., Ltd	Toronto, Ont.	750,000	750,000			
Gutta Percha & Rubber, Ltd.	"	6,000,000	2,164,500	2,000,000		
Hall (Geo.) Coal Co. of Canada, Ltd.	Montreal, Que.	200,000	200,000			
Hall Engineering Works, Ltd.	"	200,000	100,000	65,500		
Hallett & Carey Co., Ltd	Winnipeg, Man	50,000	50,000			
Hamilton Bridge Works Co., Ltd.	Hamilton, Ont	1,000,000	1,000,000			
Hamilton Cotton Co., Ltd	"	1,000,000	1,000,000		268,000 00	268,000 00
Hamilton Distillery Co., Ltd	"	500,000	400,000		200,000 00	200,000 00
Hamilton Powder Co., Ltd	Montreal, Que.	1,000,000	1,000,000		200,000 00	
Hampson (Robert) & Son, Ltd.	"	100,000	10,000			
Hampton Mfg. Co., Ltd.	Hamilton, Ont.	99,000	50,000			
Hampton Securities, Ltd	Montreal, Que	50,000	12,200			
Hanford (G. C.) Mfg. Co., Ltd.	"	10,000	10,000			
Hamilton Tar & Ammonia Co., Ltd.	Hamilton, Ont	50,000	17,200			
Hankin (Francis) & Co., Ltd	Montreal, Que.	45,000	10,000	33,000		
Hanson (J. H.) Co., Ltd.	"	145,000	9,000	6,000		
Harper-Presnail Cigar Co., Ltd.	Hamilton, Ont	100,000	75,700			
Hawkesbury Electric Light & Power Co., Ltd	Hawkesbury, Ont.	100,000	100,000		125,000 00	125,000 00
Hawthorn Mills Ltd	Carleton Place Ont.	200,000	64,900	64,600		
Hawkesworth (Alfred) & Sons Co., Ltd	Montreal, Que.	20,000	10,000			
Hayes Wheel Co. of Canada, Ltd	Chatham, Ont.	200,000	150,000			
Hebert (L. H.) & Cie, Ltee	Montreal, Que.	350,000	194,000			
Hemsley (Geo. F.) Co., Ltd.	"	50,000	14,420			
Hemsley (Richard) Ltd.	"	50,000	25,000			
Henderson (J. B.) & Co., Ltd.	Toronto, Ont.	100,000	29,700	51,000		
Henderson & Smith, Ltd.	Montreal, Que.	150,000	90,000	30,000		
Hendry (Geo. M.) Co., Ltd.	Toronto, Ont.	140,000	100,000			
Henson Knitting Co., Ltd.	Montreal, Que.	50,000	7,200			
Hepburn Brothers, Ltd	"	100,000	100,000			
Hercules Garment Co., Ltd	Montreal, Que.	50,000	19,500	29,100		
Herron-Leblanc, Ltd	"	90,000	50,000			

List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act.—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$		
Hervay Chemical Co., of Canada, Ltd.	St. Basile, Que.	100,000	100,000			
Hilda Cigar Co., Ltd.	Hamilton, Ont.	200,000	100,000			
Hillcrest Park, Ltd.	Montreal, Que.	200,000	142,900			
Higgins (A. J.) Ltd.	Montreal, Que.	100,000	35,500			
Hirsch (J.) & Sons, Ltd.	"	100,000	100,000			
Hitch Bros. Co., of Canada, Ltd.	Windsor, Ont.	50,000	29,100			
Hodge (Geo.) & Son, Ltd.	Montreal, Que.	25,000	25,000			
Hodgson Sumner & Co., Ltd.	"	1,000,000	750,000	100,000		
Holden Co., Ltd.	"	250,000	250,000			
Holeproof Hosiery Co. of Canada, Ltd.	London, Ont.	350,000	150,000			
Holland Varnish Co., Ltd.	Montreal, Que.	100,000	50,000	50,000		
Hollander (A.) & Son, Ltd.	"	100,000	100,000			
Holt, Renfrew & Co., Ltd.	Quebec, Que.	1,000,000	350,000	300,000		
Home Grain Co., Ltd.	Winnipeg, Man.	250,000	250,000			
Hope (Adam) & Co., Ltd.	Hamilton, Ont.	75,000	75,000			
Horne (Harry) Co., Ltd.	Toronto, Ont.	50,000	25,000	8,800		
Horner (Frank W.) Ltd.	Montreal, Que.	50,000	46,300			
Houde (B.) Co., Ltd.	Quebec, Que.	500,000	500,000			
Houle & Richard, Ltd.	Ottawa, Ont.	50,000	90,000			
Huck Glove Co., Ltd.	Kitchener, Ont.	50,000	15,000			
Hudon Hebert & Cie., Ltd.	Montreal, Que.	750,000	500,000			
Hudon & Orsali, Ltd.	"	1,000,000	500,000	500,000		
Hudson Bay Knitting Co., Ltd.	"	500,000	500,000			
Hughes Owens Co., Ltd.	"	149,000	110,000			
Hull Iron & Steel Foundries, Ltd.	Hull, Que.	250,000	154,500	56,200		
Humphrey (J. A.) & Son, Ltd.	Moncton, N.B.	500,000	151,300	151,300		
Hunt Bros., Ltd.	London, Ont.	148,000	148,000			
Hydraulic Machinery Co., Ltd.	Montreal, Que.	200,000	10,000	40,000		
Hymmn (S.) Ltd.	"	20,000	20,000			
Hymmn (C. S.) Co., Ltd.	London, Ont.	3,000,000	1,352,900			
Ice Mfg. Co., Ltd.	Montreal, Que.	250,000	174,100			
Imperial Oil Co., Ltd.	Sarnia, Ont.	50,000,000	30,000,000			
Imperial Pin Co., Ltd.	Montreal, Que.	100,000	100,000			
Imperial Tobacco Co., of Canada, Ltd.	"	39,733,309	5,400,500	£1,650,000		
Industrial & Educational Press, Ltd.	"	150,000	50,000	100,000		
Inglis (John) Co., Ltd.	Toronto, Ont.	1,000,000	500,000	250,000		
Inglis (R. J.) Ltd.	Montreal, Que.	48,000	48,000			
Inglis Realties, Ltd.	"	100,000	100,000			
Inglis (W. J.) Co., Ltd.	"	150,000	131,000			
Inns of Court, Ltd.	"	100,000	62,000			
Intelligencer Printing & Publishing House, Ltd.	Belleville, Ont.	25,000	25,000			
Inter-American Steamship Co., Ltd.	Toronto, Ont.	50,000	50,000			
International Braid Co., of Canada, Ltd.	Montreal, Que.	50,000	20,000			
International Business Machines Co., Ltd.	Toronto, Ont.	2,000,000	1,000,000	421,000		
International Elevator Co., Ltd.	Winnipeg, Man.	500,000	185,000	100,000		
International Equipment Co., Ltd.	Montreal, Que.	250,000	35,300			
International Feldspar Co., Ltd.	Ottawa, Ont.	50,000	47,000			
International Light & Power Co., Ltd.	Toronto, Ont.	20,000,000	3,000,000	$1,000,000	£400,000	£300,000
International Magnesite Co., Ltd.	Montreal, Que.	250,000	250,000			
International Metal Works, Ltd.	Brockville, Ont.	30,000		10,500		
International Nickel Co., of Canada, Ltd.	Toronto, Ont.	50,000,000	4,500,000			
International Ore Corporation, Ltd.	Toronto, Ont.	* 100,000	100,000			
*Shares without nominal or par value.			Shares.			
International Plow Works of Canada, Ltd.	Hamilton, Ont.	2,500,000	2,500,000			
International Ry. Publishing Co., Ltd.	Montreal, Que.	50,000	30,000	19,500		
International Royalties Co., Ltd.	Toronto, Ont.	25,000	25,000			
Interprovincial Brick Co. of Canada, Ltd.	"	500,000	150,000	103,800		
Iperia Shipping Corporation, Ltd.	Montreal, Que.	100,000	100,000			
Iron Works, Ltd.	Owen Sound, Ont.	96,000	62,000			
Israel & Oppenheimer (Canada) Ltd.	Montreal, Que.	50,000	50,000			
Italian Mosaic & Marble Co. of Canada, Ltd.	Toronto, Ont.	25,000	25,000			
Jacobs (A. W.) & Co., Ltd.	Montreal, Que.	50,000	25,000			
Jacobs (J. W.) Ltd.	"	100,000	100,000			
Jamieson (R.C.) & Co., Ltd.	"	450,000	113,500	140,300		
Jardine (A. B.) & Co., Ltd.	Hespeler, Ont.	300,000	274,700			
Jenckes Machine Co., Ltd.	Sherbrooke, Que.	1,000,000	298,900			
Jenkins Bros., Ltd.	Montreal, Que.	200,000	200,000			
Johnson Art Galleries, Ltd.	"	50,000	25,000			
Johnson (A. L.) Shoe Co., Ltd.	"	200,000	50,600			
Johnson (Hiram) Ltd.	"	100,000	10,000	61,100		
Johnson-Richardson Co., Ltd.	"	500,000	220,000			

List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act.—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Boads Issued.
		$	$	$	$ cts	$ cts.
Johnson & Shardlow, Ltd	Lennoxville Que.	100,000	98,100			
Johnston Brothers, Ltd	Vancouver, B.C.	500,000	200,000			
Johnston Temperature Regulating Co., of Canada, Ltd	Toronto, Ont	50,000	50,000			
Johnstone Strait Lumber Co., Ltd	Vancouver, B.C.	500,000	500,000			
Joliette Steel Co., Ltd	Montreal, Que	100,000	99,500			
Jones, Grant, Lunham, Ltd	"	60,000	36,300	1,500		
Jones Underfeed Stoker Co., Ltd	Toronto, Ont	150,000	75,000	75,000		
Julien (Eug.) & Co., Ltd	Quebec, Que	150,000	150,000			
Kaministiquia Power Co., Ltd	Montreal, Que	2,500,000	2,200,000		2,000,000 00	2,000,000 00
Kaufman Rubber Co., Ltd	Kitchener, Ont	2,000,000	500,000			
Kennedy Construction Co., Ltd	Montreal, Que	250,000	60,000			
Kennedy Lumber Co., Ltd	Winnipeg, Man	50,000	22,000			
Kennedy (Wm.) & Sons, Ltd	Owen Sound, Ont.	95,000	88,200	—		
Kenwood Mills, Ltd	Arnprior, Ont	300,000	300,000			
Kidd-Rutherford Co., Ltd	Montreal, Que.	50,000	2,000	48,000		
Kieran, Crawford & Gray, Ltd	"	50,000	25,200			
Kilgour (J. W.) & Bro., Ltd	Beauharnois, Que.	300,000	227,600			
Kindersley (Sask.) Farm Lands, Ltd	Winnipeg, Man	600,000	590,000		622,933 34	622,933 34
King Paper Box Co., Ltd	Montreal, Que	49,500	49,400			
King Shoe Co., Ltd	Owen Sound, Ont.	100,000	50,000	50,000	30,000 00	30,000 00
Kingsbury Footwear Co., Ltd	Montreal, Que.	300,000	300,000		300,000 00	286,000 00
Kipawa Power Co., Ltd	Toronto, Ont.	1,000,000	100,500			
Kirby (T. S.) & Co., Ltd.	Ottawa, Ont.	100,000	60,000			
Kitchener Buttons, Ltd	Kitchener, Ont.	150,000	46,800			
Klein (S.) Ltd	Moatreal, Que.	50,000	50,000			
Kleker (Bernard) & Co., Ltd	"	30,000	30,000			
Klotz Co., Ltd	"	100,000	48,000			
La Compagnie de Chaussures de Fraserville, Ltd.	Fraserville, Que.	100,000	78,400	2,100		
La Compagnie d'Immeubles de Montreal, Ltd.	Montreal, Que.	20,000	8,100			
La Compagnie Electriques des Laurentides, Ltd.	Laurentides, Que.	149,000	63,400			
La Cie Générale de Frais Funéraires, Ltd.	Montreal, Que.	150,000	86,000			
La Cie. Louis Caron et Fils, Ltd	"	50,000	40,500			
La Corona Hotel Co., Ltd	"	50,000	49,700			
La Monte (Geo.) & Son, Ltd	Toronto, Ont.	50,000	50,000			
La Presse Publishing Co., Ltd	Montreal, Que	1,250,000	750,000	500,000		
La Traverse de Levis, Ltd.	Quebec, Que.	500,000	270,000			
Labatt (John) Ltd	London, Ont.	250,000	250,000			
Labelle (H. P.) & Co., Ltd	Montreal, Que.	150,000	86,800	2,500		
Lachine Transportation & Coal Co., Ltd	"	50,000	10,000			
Lackawanna Coal Co., Ltd.	"	50,000	42,200			
Lacroix & Leger, Ltd	"	55,000	55,000			
Lady Belle Shoe Co., Ltd	Kitchener, Ont.	50'000	15,000			
Laflenr (O. B.) & Fils, Ltd	Lachute, Que.	50,000	50,000			
Laguna de Terminos Estate, Ltd	Toronto, Ont.	24,000	25			
Lake Erie Navigation Co., Ltd	Walkerville, Ont.	40,000	40,000			
Lake of the Woods Milling Co., Ltd	Montreal, Que.	4,000,000	2,100,000	1,500,000	1,000,000 00	1,000,000 00
Lake Superior Paper Co., Ltd.	Sault Ste Marie, Ont	8,000,000	5,000,000	3,000,000	6,606,000 00	5,000,000 00
Lakeport Elevator Co., Ltd.	Fort William, Ont.	40,000	40,000			
Lalonde & Desroches, Ltd	Montreal, Que.	50,000	49,600			
Lamarre & Co., Ltd	St. Remi, Que	195,000	77,500	15,000		
Lamarre (W.) & Co., Ltd	Montreal, Que.	100,000	34,000			
Lamb's Market, Ltd	"	50,000	50,000			
Lambert (Dr. J. O.) Ltd	"	250,000	115,000			
Lamontagne, Ltd	"	400,000	203,300		104,000 00	104,000 00
Lamy (P.) & Freres, Ltd	"	49,000		30,000		
Lancashire Dynamo & Motor Co. of Canada, Ltd.	"	50,000	5,500			
Lanctot (Alfred) & Fils, Ltd	Sherbrooke, Que.	50,000	37,200			
Land, Log and Lumber Co., Ltd.	Winnipeg, Man.	300,000	150,000			
Landau & Cormack, Ltd	Montreal, Que.	200,000		74,100		
Lang Tanning Co., Ltd	Kitchener, Ont.	600,000	600,000			
Laporte Irwin, Ltd	Montreal, Que.	25,000	10,000			
Laurentian Chemical Co., Ltd	Toronto, Ont.	590,000	268,700	290,000	100,000 00	100,000 00
Laurentian Land Co., Ltd.	Ottawa, Oat.	100,000	65,000			
Laurentide Co., Ltd.	Montreal, Que.	10,000,000	9,600,000		1,200,000 00	1,200,000 00
Laurentide Mica Co., Ltd	Ottawa, Ont.	25,000	25,000			
Laurie Machinery Co., Ltd.	Montreal, Que.	25,000	25,000			
Laurier Park Land and Development Co., Ltd.	"	150,000	63,700	54,000		
Laurin & Leitch Engineering and Construction Co., Ltd	"	100,000	100,000			
Laurion (A.) & Co., Ltd.	"	50,000	21,000			
Lauzon Engineering Co., Ltd.	Levis, P.Q.	150,000	128,100			

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List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act.—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Lazare (L. P.) & Co., Ltd.	Montreal, Que.	50,000	15,100			
Leach Piano Co., Ltd	"	145,000	102,200			
Leeming Miles Co., Ltd.	"	100,000	75,000			
Legare (P. T.) Ltd	Quebec, Que	1,000,000	660,100			
Lehigh Coal Co., Ltd	Montreal, Que	50,000	10,000			
Leitch Anderson Grain Co., Ltd.	Winnipeg, Man.	200,000	92,000			
Leonard Fisheries, Ltd	Montreal, Que.	1,000,000	421,900	314,600		
Leonard Tractor Co. of Canada, Ltd.	"	1,000,000	500,000			
Leslie (A. C.) & Co., Ltd	"	250,000	200,000			
Lessard (T.) & Sons, Ltd	"	95,000	70,500			
Levasseur (L.) & Co., Ltd	"	30,000	10,000			
Levesons, Ltd	Vancouver, B.C.	50,000	18,000			
Levy (H.) & Sons, Ltd.	Montreal, Que.	199,900	126,400			
Lewis Bros., Ltd	"	1,000,000	468,000			
Liberty Mfg. Co., Ltd	Toronto, Ont	100,000	25,000			
Librairie Beauchemin, Ltd	Montreal, Que.	500,000	500,000		250,000 00	250,000 00
Liggett (Louis K.) Co. Ltd.	Ottawa, Ont	300,000	216,700			
Linde Canadian Refrigeration Co., Ltd	Montreal, Que.	100,000	50,000			
Lindsay (C. W.) Ltd	"	1,000,000	500,000	146,500		
Linton Apartments, Ltd.	Toronto, Ont	600,000	143,000	400,000	720,000 00	720,000 00
Lion Vinegar Co. Ltd	Montreal Que.	50,000	14,500			
Liquid Carbonic Co., Ltd	Toronto, Ont	10,000	8,000			
Lister (R. A.) & Co. (Canada) Ltd	"	1,000,000	750,500			
Log Supply Co., Ltd.	Montreal, Que	50,000	50,000			
London Cold Storage and Warehousing Co., Ltd	London, Ont.	150,000	100,000			
London & Petrolia Barrel Co., Ltd	"	500,000	254,600			
London Hosiery Mills, Ltd.	"	60,000	4,950	40,000		
Loomis-Dakin Construction Co., Ltd.	Sherbrooke, Que.	50,000	45,700			
Loomis-Dakin, Ltd	"	100,000	80,400			
Louden Machinery Co. of Canada, Ltd	Guelph, Ont	250,000	177,900	11,000		
Louison Lumber Co., Ltd	Jacquet River, N.B	450,000	200,000	250,000	100,000 00	100,000 00
Lovell (John) & Son, Ltd	Montreal, Que.	130,000	100,000	17,000		
Lovell (R. J.) Co., Ltd.	Toronto, Ont.	40,000	39,300			
Lowe Martin Co., Ltd.	Ottawa, Ont	70,000	45,500	14,300		
Lowndes Co., Ltd.	Toronto, Ont.	500,000	444,000			
Lowney (Walter M.) Co. of Canada, Ltd	Montreal, Que.	500,000	403,300		125,000 00	125,000 00
Lowry's Ltd	"	50,000	20,000			
Luke Bros., Ltd	"	100,000	50,000	47,300		
Lundy, Scott, Ltd	Niagara Falls, Ont	50,000	50,000			
Lyall (P.) & Sons Construction Co., Ltd	Montreal, Que	3,250,000	1,750,000	1,300,000	1,250,000 00	1,250,000 00
Lyman Bros. & Co., Ltd.	Toronto, Ont.	400,000	160,000			
Lymans, Ltd	Montreal, Que.	1,000,000	387,250			
Lyman Tube and Supply Co., Ltd.	"	180,000	120,000	50,000		
Lymburner, Ltd	Montreal, Que.	75,000	75,000			
McArthur Beltings, Ltd	Brockville, Ont.	40,000		39,800		
McArthur (Alex.) & Co., Ltd.	"	180,000	76,000			
McArthur-Irwin, Ltd.	"	360,000	180,000	180,000		
McAuliffe Davis Lumber Co., Ltd	Ottawa, Ont	300,000	100,000	200,000		
McCall (D.) Co., Ltd	Toronto, Ont.	500,000	346,800			
McClary Mfg. Co., Ltd	London, Ont	500,000	500,000			
McClean (R. B.) Grain Co., Ltd	Winnipeg, Man.	250,000	95,000			
McComb (J. H.) Ltd	Montreal, Que.	50,000	50,000			
McComber's Ltd	"	200,000	67,200		75,000	
McDougall (A.) & Co., Ltd.	"	250,000	125,000	125,000		
McDougall (John) Caledonian Iron Works, Ltd.	"	500,000	500,000			
McEntyre (John) Ltd.	"	50,000	10,000			
McEwen, Cameron, Wait, Ltd	"	75,000	25,200			
McFarlane, Son & Hodgson, Ltd	"	250,000	30,000	158,000		
McFee (Alex.) & Co., Ltd.	"	149,000	100,000			
McGaw-Dwyer, Ltd	Winnipeg, Man.	500,000	132,800	17,200		
McIntyre Realty Co. Ltd	Montreal, Que.	1,000,000	300,100			
McIntyre Son & Co., Ltd	"	1,250,000	250,000	500,000	500,000 00	500,000 00
McIntyre & Taylor, Ltd.	Toronto, Ont.	20,000	20,000			
McKean, George & Co., Ltd.	St. John, N. B.	100,000	100,000			
McKeen (C. E.) Shoe Co., Ltd.	Montreal, Que.	48,000		5,025		
McKenna, Ltd	"	50,000	50,000			
McKim, A. Ltd	"	500,000	400,000	65,200		
McKinnon Columbus Chain, Ltd	St. Catharines, Ont.	1,000,000	589,200			
McKinnon Industries, Ltd.	"	1,000,000	700,600			
McLain (Louis) Co. Ltd	Winnipeg, Man.	30,000	30,000			
McLaren (J. C.) Belting Co., Ltd.	Montreal, Que.	150,000	120,000			
McLaren (W. D.) Ltd.	"	40,000	36,500			
McLaurin Bros., Ltd	Lachine, Que.	200,000	200,000			

LIST of Companies which have submitted the Return prescribed by Section 106 of the Companies Act.—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts	$ cts.
McLean Kennedy, Ltd.	Montreal, Que	20,000	20,000			
McLennan Lumber Co., Ltd.	"	100,000	100,000			
McMullen (Henry) Ltd.	"	250,000	117,600			
McNulty Bros. Ltd.	"	25,000	5,000			
MacArthur, Perks & Co., Ltd.	Ottawa, Ont.	1,500,000	500,000			
Macdonald (A.) Co., Ltd.	Winnipeg, Man.	7,000,000	3,000,000	1,766,800		
MacFarlane (A.) & Co., Ltd	Montreal, Que.	100,000	100,000			
Macfarlane R. & Co., Ltd.	"	100,000	100,000		125,000 00	27,000 00
MacKay, Ltd.	"	100,000	80,500			
Mack Brick Co., Ltd.	"	500,000	324,300			
MacKenzie, Ltd	Ottawa, Ont.	200,000	101,700			
MacKinnon Steel Co., Ltd	Sherbrooke, Que.	500,000	362,400			
MacLaren (James) Co., Ltd.	Buckingham, Que	500,000	500,000		500,000 00	
MacLean, Benn & Nelson, Ltd	Montreal, Que.	75,000	30,000			
Madera Co., Ltd.	Toronto, Ont.	1,000,000	1,000,000			
Magor Son & Co., Ltd	Montreal, Que.	100,000	100,000			
Main Belting Co. of Canada, Ltd	"	5,000	5,000			
Mallinckrodt Chemical Works, Ltd	"	100,000	30,000			
Manitoba Grain Co., Ltd.	Winnipeg, Man.	50,000	15,500			
Manitoba Steel and Iron Co., Ltd	"	500,000	150,900			
Manitoba Steel Foundries, Ltd.	Montreal, Que.	300,000	64,200			
Manville Asbestos, Co., Ltd	Asbestos, Que.	1,000,000	1,000,000		600,000 00	409,000 00
Maple Tree Producers Association, Ltd.	Montreal, Que.	20,000	7,750			
Marcean (J. A.) Ltd.	"	50,000	11,600			
Marconi Wireless Telegraph Co. of Canada, Ltd	"	5,000,000	5,000,000			
Marier & Tremblay, Ltd	Quebec, Que	48,000	40,800			
Maritime Nail Co., Ltd.	St. John, N. B.	3,250,000	365,500	340,500	450,000 00	450,000 00
Marlatt & Armstrong Co., Ltd.	Oakville, Ont.	150,000	150,000			
Marsh & McLennan, Ltd	Montreal, Que.	50,000	5,000			
Marsh (Wm. A.) Co., Ltd.	Quebec, Que.	200,000	195,200			
Marshall-Wells Co., Ltd.	Winnipeg, Man.	1,000,000	1,000,000			
Marson (S. W.) Co., Ltd.	"	25,000	20,900			
Martel Stewart Co., Ltd	Montreal, Que.	45,000	30,000	4,700		
Martin Freres & Cie, Ltd.	"	100,000	47,000	6,000	100,000 00	100,000 00
Martin (P. P.) & Co., Ltd	"	500,000	350,000			
Marx & Rawolle of Canada, Ltd.	"	25,000	25,000			
Masco Co., Ltd	Toronto, Ont.	100,000	77,000	10,500		
Mason & Risch, Ltd.	"	1,000,000	395,000			
Mason Regulator and Engineering Co., Ltd.	Montreal, Que.	48,000	48,000			
Maspero Frères, Cairo, Egypt, London and Montreal, Ltd	"	50,000	50,000			
Masson & Sons, Ltd	"	20,000	4,500			
Masters & Co., Ltd	"	200,000	40,500	50,000		
Matthews-Horton, Ltd.	"	40,000	20,300			
Matthews Towers & Co., Ltd	"	199,000	137,200			
Maxwell, E. J.) Ltd.	"	100,000	60,000	40,000		
Maxwell Motor Co. of Canada, Ltd.	Windsor, Ont.	10,000	10,000			
May, (Thomas) & Co., Ltd.	Montreal, Que.	48,000	35,000			
Maycock & Toms, Ltd	Vinemount, Ont.	60,000	34,400			
Meadow Sweet Cheese Mfg. Co., Ltd.	Montreal, Que.	75,000	16,300			
Mead Electric Co., Ltd	"	50,000	35,000			
Meagher Bros. & Co., Ltd	Montreal, Que.	100,000	100,000			
Meakins & Sons, Ltd.	Hamilton, Ont.	100,000	63,000			
Melchers Gin & Spirits Distillery Co., Ltd.	Berthierville, Que	1,000,000	100,000	100,000		
Meldrum Bros., Ltd.	"	250,000	100,000	80,000		
Menard Motor Truck Co., Ltd	Windsor, Ont.	150,000	93,300			
Mendelsohn (A.) Ltd.	Montreal, Que.	40,000	14,500			
Mercantile Marine Agencies of Canada, Ltd	"	100,000	21,700			
Mercur (R. J.) & Co., Ltd.	"	300,000	200,000	100,000		
Mercury Mills, Ltd.	Hamilton, Ont.	1,000,000	90,000	244,700		
Meriden Britannia Co., Ltd.	"	400,000	400,000			
Merrill Co., Ltd.	Toronto, Ont.	500,000	500,000			
Metallic Roofing Co. of Canada, Ltd	"	200,000	175,000			
Metallurgic Enterprises Co., Ltd	Sorel, Que.	10,000	10,000			
Metals Coating Co. of Canada, Ltd.	Montreal, Que	200,000	100,000	76,400		
Metcalf, (John S.) Co., Ltd.	"	250,000	250,000			
Metcalfe Candy Co., Ltd.	Kitchener, Ont.	50,000	50,000			
Metropolitan House Furnishing Co., Ltd.	Montreal, Que.	250,000	210,000			
Mexican Electric Light Co., Ltd.	Toronto, Ont.	6,000,000	6,000,000		$ 6,000,000	$ 5,567,000
Mexican Light & Power Co., Ltd.	"	25,000,000	13,585,000	6,000,000	$ 12,000,000	$ 11,340,500
					£ 3,000,000	£ 3,000,000
Mexico North Western Railway Co.	"	40,000,000	25,000,000		£ 11,959,700	£ 8,021,000
Mexico Tramways Co., Ltd.	"	30,000,000	20,177,000		$ 15,000,000	$ 10,298,000
					£ 3,150,000	£ 2,964,200
Meyer-Thomas Co., Ltd.	Montreal, Que.	100,000	73,000			

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LIST of Companies which have submitted the Return prescribed by Section 106 of the Companies Act.—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Michaels (Morris), Ltd	Montreal, Que	50,000	2,000	8,500		
Michelin Tire Co., of Canada, Ltd.	Toronto, Ont.	40,000	4,000			
Middlesex Mills, Ltd	London, Ont.	250,000	98,400	150,000		
Midland Shipbuilding Co., Ltd	Midland, Ont.	1,000,000	590,800			
Millen (John) & Son, Ltd.	Montreal, Que.	250,000	146,300	64,600		
Miller Bros. Co., Ltd	"	200,000	200,000			
Miller Bros. & Sons, Ltd	"	250,000	75,000	75,000		
Miller-Morse Hardware Co., Ltd	Winnipeg, Man	1,000,000	750,000			
Miller Rubber Co., of Canada, Ltd.	Toronto, Ont	50,000	5,005			
Mills Bros., Ltd	Hamilton, Ont.	1,000,000	1,000,000			
Miltons, Limited	Montreal, Que.	250,000	135,050			
Miner Rubber Co., Ltd	Granby, Que.	1,000,000	900,000			
Miner Shoe Co., Ltd.	Montreal, Que.	450,000	140,000	150,000		
Mining Corporation of Canada, Ltd.	Toronto, Ont.	8,300,250	8,300,250			
Miramichi Quarry Co., Ltd	Quarryville, N.B.	90,000	59,100		40,000 00	40,000 00
Mitchell Button Co., Ltd	Kitchener, Ont.	50,000	11,000			
Mitchell Rail Anchor & Specialty Co., Ltd	Montreal, Que.	30,000	30,000			
Mitchell (Robert) Co., Ltd	"	200,000	200,000			
Modern Heating & Engineering Co., Ltd	Montreal, Que.	19,000	35,000			
Moloney Electric Co. of Canada, Ltd.	Windsor, Ont	300,000	300,000			
Monarch Electric Co., Ltd	St Lambert, Que.	120,000	33,700	2,000		
Monarch Lumber Co., Ltd.	Winnipeg, Man	1,000,000	1,000,000			
Montreal Abattoirs, Ltd	Montreal, Que	1,500,000	815,000	115,000	800,000 00	800,000 00
Montreal Architectural Iron Works, Ltd	"	50,000	24,200			
Montreal Cotton & Wool Waste Co., Ltd	"	400,000	400,000			
Montreal Cottons, Ltd	"	6,000,000	3,000,000	3,000,000	2,000,000 00	1,000,000 00
Montreal Crockery Co., Ltd.	"	20,000	10,000			
Montreal Development & Land Co., Ltd	"	2,000,000	2,000,000			
Montreal Electric Co., Ltd	"	40,000	30,000			
Montreal Financial Times Publishing Co., Ltd	"	100,000	50,000	37,500		
Montreal Floral Exchange, Ltd	"	40,000	29,400			
Montreal (Lachine Canal) Land Syndicate, Ltd	"	500,000	100,000	100,000		
Montreal Leather Co., Ltd	"	210,000	210,000			
Montreal Lithographing Co., Ltd.	"	100,000	100,000			
Montreal Locomotive Works, Ltd	"	3,000,000	1,800,000	1,200,000	1,500,000 00	1,500,000 00
Montreal Lumber Co., Ltd	"	100,000	100,000			
Montreal Quilting Co., Ltd	"	50,000	50,000			
Montreal Sand & Gravel Co., Ltd	"	100,000	95,100			
Montreal Shirt & Overall Co., Ltd	"	150,000	76,300			
Montreal Standard Publishing Co., Ltd	Montreal, Que	50,000	50,000			
Montreal Star Publishing Co., Ltd	"	600,000	600,000		500,000 00	500,000 00
Montreal Waterproof Clothing Co., Ltd.	"	99,000	35,000	25,000		
Montreal Welland Land Co., Ltd	Welland, Ont.	1,000,000	195,400	145,200		
Montreal Wood-Mosaic Flooring Co., Ltd	Montreal, Que	5,000	2,600			
Morgan (Henry) & Co., Ltd	"	3,000,000	1,712,100			
Morin Packing Co., Ltd	Pointe Aux Trembles, Que.	49,000	32,500		70,000 00	70,000 00
Morris (Herbert) Crane & Hoist Co., Ltd	Niagara Falls, Ont.	250,000	100,000			
Morrissette (C. Emile), Ltd	Quebec, Que.	100,000	50,000			
Morrison (Jas.) Brass Mfg. Co., Ltd	Toronto, Ont.	300,000	200,000			
Moscovitch Bros. & Co., Ltd	Montreal, Que	50,000	30,000			
Motor Trucks, Ltd	Brantford, Ont.	500,000	400,000			
Moulton (L. E.) & Co., Ltd	Montreal, Que	50,000	22,400			
Moulton Mfg. Co., Ltd.	"	90,000	39,400			
Mount Royal Colour & Varnish Co., Ltd	"	25,100	100			
Mount Royal Foundry Co., Ltd	"	100,000	90,000			
Mount Royal Milling & Mfg. Co., Ltd.	"	1,000,000	492,000			
Mount Royal Plateau Co., Ltd	"	21,000	21,000			
Mount Royal Realties, Ltd	"	1,000,000	500,000			
Moyer (E. N.) Co., Ltd	Toronto, Ont.	150,000	46,200	7,500		
Muir (Wm.) & Son, Ltd	Montreal, Que	45,000	45,000			
Munderloh & Co., Ltd.	"	300,000	100,000			
Munitions & Metal Products, Ltd	"	1,000,000	2,500,000			
Munitions & Machinery, Ltd	Lachine, Que.	100,000	100,000			
Murray Kay, Ltd	Toronto, Ont.	4,000,000	1,500,000	1,468,500		
Muser Bros. (Canada), Ltd	Montreal, Que	250,000	15,000			
Mussens, Ltd	"	500,000	207,000	104,600		
Mutual Chemical Co. of Canada, Ltd	Sherbrooke, Que.	49,000	49,000			
Mutual Elevator Co., Ltd.	Winnipeg, Man.	500,000	350,000			

List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act.—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Mutual Film Corporation of Canada, Ltd	Montreal, Que	75,000	75,000			
Nadeau Lumber Co., Ltd	"	25,000	8,400			
National Boiler Washing Co., Ltd	Montreal, Que	25,000	25,000			
National Breweries, Ltd	"	10,000,000	2,254,300	2,775,000	2,500,000 00	2,000,000 00
National Brick Co. of Laprairie, Ltd	"	2,000,000	2,000,000		3,463,820 00	2,819,100 00
National Bridge Co. of Canada, Ltd	Longue Pointe, Que	1,000,000	1,000,000		3,000,000 00	585,000 00
National Cash Register Co. of Canada, Ltd	Toronto, Ont.	1,000,000	1,000,000			
National Drug & Chemical Co. of Canada, Ltd	Montreal, Que	8,000,000	1,835,800	$1,281,500 £ 600,000		
National Dry Goods, Ltd	Toronto, Ont.	100,000	39,000			
National Elevator Co., Ltd	Winnipeg, Man	500,000	250,000	250,000		
National Fire Proofing Co. of Canada, Ltd	Toronto, Ont.	1,000,000	300,000		300,000 00	300,000 00
National Hydro-Electric Co., Ltd	Montreal, Que	1,000,000	14,200		175,000 00	175,000 00
National Jobbers & Importers, Ltd	"	75,000	75,000			
National Machinery & Supply Co., Ltd	Hamilton, Ont.	60,000	30,000	19,100		
National Optical Co., Ltd.	Montreal, Que	50,000	15,000			
National Paper Co., Ltd.	Valleyfield, Que	100,000	63,500		60,000 00	60,000 00
National Shipbuilding Co., Ltd.	Goderich, Ont	100,000	42,000			
National Steel Car Co., Ltd.	Hamilton, Ont.	6,000,000	2,000,000	1,500,000	3,000,000 00	3,000,000 00
National Tobacco Co., Ltd	Montreal, Que	4,000,000	4,000,000			
National Wood Manufacturing Co., Ltd	South River, Ont	125,000	60,000			
National Woolwear Co., Ltd	Hamilton, Ont.	45,000	45,000			
Nesbitt Heights, Ltd	Montreal, Que	200,000	182,500			
New Brunswick Shale Co., Ltd.	Toronto, Ont.	100,000	100,000			
New Idea Spreader Co., Ltd.	Guelph, Ont	250,000	30,000			
Newman Munderloh Clock Co., Ltd	Montreal, Que	10,000	1,000			
News Pulp & Paper Co., Ltd	"	1,000,000	600,000		400,000 00	250,000 00
New York & Yarmouth Fish Co., Ltd.	Yarmouth, N.S.	25,000	3,400			
Niagara & Erie Land Corporation, Ltd	Toronto, Ont.	3,000,000	2,000,000	861,400		
Nichols Chemical Co., Ltd	Montreal, Que	250,000	250,000			
Nicholson Constructions, Ltd.	"	100,000	25,000			
Nobert, Dugre, Arsenault, Ltd.	Three Rivers, Que.	10,000	10,000			
Nominingue Pulp & Lumber Co., Ltd	Montreal, Que	300,000	300			
Norris Grain Co., Ltd	Winnipeg, Man	150,000	150,000			
North Alberta Coal Co., Ltd	Toronto, Ont.	2,000,000	500,500	500,000		
North American Collieries, Ltd	Montreal, Que	1,000,000	927,200			
North American Hardware Supply, Ltd	"	40,000	29,800			
North American Lumber & Supply Co., Ltd	Winnipeg, Man	100,000	100,000			
North American Magnesite Co., Ltd.	Montreal, Que	200,000	186,600			
North American Telegraph Co., Ltd	Kingston, Ont	10,000,000	200,000			
Northeastern Lunch Co., Ltd	Montreal, Que	300,000	120,000	5,900		
North Montreal Land Co., Ltd	"	175,000	175,000			
Northern Aluminum Co., Ltd	Toronto, Ont.	500,000	500,000			
Northern Electric Co., Ltd.	Montreal, Que	10,000,000	6,000,000		10,000,000 00	3,500,000 00
Northern Engineering & Supply Co., Ltd.	Fort William, Ont	100,000	45,000			
Northern Land Co., Ltd	Montreal, Que.	250,000	130,000	5,000	130,000 00	130,000 00
Northrop & Lyman Co., Ltd	Toronto, Ont	100,000	100,000			
Nor'West Farmer, Ltd	Winnipeg, Man.	250,000	125,000			
North Star Grain Co., Ltd.	Winnipeg, Man.	500,000	300,000	100,000		
North Star Lumber Co., Ltd.	Kinistino, Sask.	50,000	47,700			
Northwestern Brass, Ltd	Winnipeg, Man	1,000,000	500,000	500,000		
North West Navigation Co., Ltd.	"	250,000	125,000			
Norton (A. O.), Ltd.	Coaticook, Que	250,000	250,000			
Norton Carbon Paper Co., Ltd.	Montreal, Que	10,000	7,500			
Norwood Engineering Co. of Canada, Ltd	Cowansville, Que.	50,000	50,000			
Novelty Mfg. & Art Co., Ltd	Montreal, Que	40,000	25,000			
O'Brien (M. J.), Ltd	Ottawa, Ont	20,000,000	13,223,100			
Occidental Cafe, Ltd	Montreal, Que.	20,000	2,700	15,000		
O'Connors, Ltd	"	100,000	45,000			
Ogilvie Brothers, Ltd.	"	45,000	30,000			
Ogilvie Flour Mills Co., Ltd	"	4,500,000	2,500,000	2,000,000	2,350,00 00	2,350,000 00
Ogilvie Grain Co., Ltd	"	5,000	5,000			
Ogilvie (Thomas) & Sons, Ltd	Toronto, Ont.	200,000	200,000			
Ogulnik (Sam'l) & Co., Ltd.	Montreal, Que	100,000	25,000	25,000		
Okanagan Saw Mills, Ltd	Enderby, B.C.	500,000	200,000		221,538 00	221,538 00
Ontario Glove Mfg. Co., Ltd	Kitchener, Ont.	40,000	21,000			
Ontario Gravel Freighting Co., Ltd.	Windsor, Ont.	50,000	30,000			
Ontario Powder Co., Ltd	Montreal, Que	100,000	100,000			

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List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act.—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Ontario Steel Products Co., Ltd	Gananoque, Ont	1,500,000	750,000	750,000	600,000 00	600,000 00
Orchard Grove Land Co., Ltd	Montreal, Que	49,000	24,000			
O'Reilly & Belanger, Ltd	Ottawa, Ont	100,000	60,000			
Osborn (Sam'l) (Canada) Ltd	Montreal, Que	50,000	2,000	47,500		
Osborne Park Land Co., Ltd	"	100,000	90,000		120,000 00	120,000 00
Ottawa & Hull Power & Mfg. Co., Ltd	Ottawa, Ont	1,000,000	1,000,000			
Ottawa Artificial Ice Co., Ltd	"	250,000	60,500	95,900		
Ottawa Dairy, Ltd	"	500,000	300,000	200,000		
Ottawa Electric Co.	"	3,000,000	1,500,000		1,125,000 00	1,125,000 00
Ottawa Light, Heat & Power Co., Ltd	"	5,000,000	3,500,000			
Ottawa Paint Works, Ltd	"	250,000	120,000	80,000		
Ottawa Gas Co.	"	2,000,000	2,000,000		150,000 00	150,000 00
Ottawa Transportation Co., Ltd	"	500,000	237,300			
Ottawa Truss & Surgical Mfg. Co., Ltd	"	271,600	103,400			
Ottawa Wine Vault Co., Ltd	"	250,000	119,700			
Oxford Hotel Co., Ltd	Montreal, Que	200,000	136,300			
Oxford Knitting Co., Ltd	Woodstock, Ont	50,000	50,000			
Oxley (James H.), Ltd	Montreal, Que	10,000	10,000			
P. & M. Co., Ltd	"	10,000	10,000			
Pacific Construction Co., Ltd	Vancouver, B.C.	1,000,000	1,000,000			
Packard (L. H.) & Co., Ltd	Montreal, Que	300,000	131,800	1,000		
Page & Shaw (Canada), Ltd	"	100,000	50,000	50,000	20,000 00	20,000 00
Palmers, Ltd	"	100,000	100,000			
Palmolive Co. of Canada, Ltd	Toronto, Ont.	300,000	300,000			
Panther Rubber Co., Ltd	Sherbrooke, Que.	100,000	100,000			
Paper, Ltd	Montreal, Que	40,000	13,000			
Paper & Hardware Products, Ltd	"	49,000	49,000			
Pariseau Freres, Ltd	"	400,000	223,100			
Parisian Corset Mfg. Co., Ltd	Quebec, Que	65,000	32,000	33,000		
Parisian Imports, Ltd	Windsor, Ont	50,000	5,000	9,000		
Parker-Irwin, Ltd	Montreal, Que	50,000	30,000			
Parker Pulpwood & Timber Co., Ltd	"	49,000	49,000			
Partridge (F. E.) Rubber Co., Ltd	Guelph, Ont	125,000	108,000			
Paterson (N. M.) & Co., Ltd	Winnipeg, Man	400,000	400,000			
Paterson (Wm.) & Son Co., Ltd	Brantford, Ont.	125,000	125,000			
Patent Grates Co., Ltd	Sorel, Que.	50,000	16,500			
Payne (J. Bruce) Ltd	Granby, Que.	100,000	74,400			
Peace River Navigation Co., Ltd	Edmonton, Alta	50,000	16,800			
Pearson (S.) Son & Partners (Canada), Ltd	Montreal, Que	250,000	250,000			
Peck (John W.) & Co., Ltd	"	6,000,000	938,500	581,000		
Pedlar People, Ltd	Oshawa, Ont.	500,000	400,000			
Peerless Cereal Mills, Ltd	Woodstock, Ont	100,000	100,000			
Peerless Hats, Ltd	Montreal, Que	50,000	50,000			
Pembroke Milling Co., Ltd	Pembroke, Ont	75,000	40,000			
Peninsula Tug & Towing Co., Ltd	Wiarton, Ont.	20,000	8,500			
Penmans, Ltd	Montreal, Que	4,000,000	2,150,600	1,075,000	2,000,000 00	2,000,000 00
Penn. Coal & Transportation Co., Ltd	"	2,000,000	1,800,000			
People's Gas Supply Co., Ltd	Ottawa, Ont	20,000	5,000			
Perolin Co. of Canada, Ltd	Toronto, Ont.	50,000	20,500			
Perth Shoe Co., Ltd	Perth, Ont.	200,000	89,700	35,300		
Peterborough Review Co., Ltd	Peterborough, Ont	60,000	15,000	26,800		
Peters (H. S.) Ltd	Welland, Ont	50,000	50,000			
Petrie (H. W.) of Montreal, Ltd	Montreal, Que	40,000	30,000			
Petrolia Land & Investment Co., Ltd	"	350,000	150,100	100,000		
Phelan, (F. E.) Ltd	"	100,000	100,000			
Phillips (Eugene) F. Electrical Works, Ltd	"	4,000,000	3,600,000			
Phillips (George) & Co. Ltd	"	40,000	40,000			
Phillips, Ltd	"	60,000	60,000			
Phillips Mfg. Co., Ltd	Toronto, Ont	299,900	250,000			
Phillips Steel & Wire Co., Ltd	Montreal, Que	100,000	50,000	17,000		
Phoenix Bridge & Iron Works, Ltd	"	1,500,000	800,000		£154,100	£154,100
Phoenix Import Co., Ltd	"	50,000	26,000			
Phonola Co. of Canada, Ltd	Kitchener, Ont	250,000	115,000	20,000		
Pilcher Mfg. Co., Ltd	Windsor, Ont	50,000	9,780			
Piper (Hiram L.) Co., Ltd	Montreal, Que	40,000	40,000			
Piper (N. L.) Railway Supply Co., Ltd	Toronto, Ont	40,000	40,000			
Plow (B.) & Co., Ltd	Montreal, Que	20,000	20,000			
Pneumatic Concrete Placing Co., of Canada, Ltd	"	50,000	50,000			
Pneumatic Scale Corp. of Canada, Ltd	Toronto, Ont	20,000	20,000			
Polson (N. C.) & Co., Ltd	Kingston, Ont	300,000	300,000			
Port Arthur Elevator Co., Ltd	Winnipeg, Man	500,000	250,000			
Port Nelson Fish Co., Ltd	"	100,000	31,000			

List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts	$ cts.
Porto Rico Railways Co., Ltd.	Toronto, Ont.	4,000,000	3,000,000	1,000,000	3,000,000 00	3,000,000 00
					£ 1,500,000	£ 265,000
Powers (P. J.) & Co., Ltd.	Ottawa, Ont.	45,000	28,800			
Pratt & Whitney Co., of Canada, Ltd.	Dundas, Ont.	150,000	150,000			
Precision Tool & Machine Co., Ltd.	Montreal, Que.	50,000	23,000	16,000		
Printers, Ltd.	" "	50,000	12,500			
Proctor & Gamble Distributing Co. of Canada, Ltd	Hamilton, Ont.	25,000				
Producers Dairy, Ltd	Ottawa, Ont.	200,000	41,000			
Prud'homme, A. & Fils, Ltd.	Montreal, Que.	145,000	67,500	3,800		
Puebla Tramway, Light & Power Co., Ltd.	Toronto, Ont.	6,500,000	6,500,000		$ cts. 12,000,000 00	$ cts. 7,349,900 00
Purdy & Henderson Co., Ltd.	Montreal, Que.	200,000	104,900			
Pure Ice Co., Ltd.	"	95,000	71,150			
Pyke (Jas. W.) & Co., Ltd	"	300,000	300,000			
Pyrene Mfg. Co. of Canada, Ltd.	"	100,000	10,000			
Quality Canners of Canada, Ltd.	Windsor, Ont.	250,000	158,600			
Quebec Cartage & Transfer Co., Ltd	Quebec, Que.	300,000	77,000	66,600		
Queen Dress & Waist Co., Ltd.	Montreal, Que.	50,000	49,000			
Queens Hotel, Ltd.	"	300,000	300,000			
Quinlan Cut Stone, Ltd.	Westmount, Que.	400,000	300,000		150,000 00	150,000 00
Quinlan & Robertson, Ltd.	Montreal, Que.	1,000,000	1,000,000			
Quintal & Lynch, Ltd	"	300,000	125,000			
Quinte Fuel Dock & Supply Co., Ltd.	Deseronto, Ont.	20,000	6,300			
Quyon Milling Co., Ltd.	Quyon, Que.	20,000	18,000			
Racine (Alphonse) Ltd.	Montreal, Que.	1,500,000	1,500,000			
Rail Joint Co. of Canada, Ltd.	"	49,000	49,000			
Ramsay (James) Ltd.	Edmonton, Alta.	100,000	100,000			
Rat Portage Lumber Co., Ltd.	Winnipeg, Man.	2,000,000	2,000,000		3,000,000 00	
Rawleigh (W. T.) Co., Ltd.	Toronto, Ont.	50,000	50,000			
Raymond Construction Co., Ltd.	Montreal, Que.	40,000	25,000			
Raymond Hardware, Ltd.	"	20,000	10,025			
Reade Construction Co., Ltd.	"	50,000	50,000			
Ready's Limited	Fnirville, N.B.	243,000	121,500	121,500	250,000 00	250,000 00
Redmond Co., Ltd.	Montreal, Que.	300,000	300,000			
Reford (Robert) Co., Ltd.	"	100,000	100,000			
Regal Shirt Co., Ltd.	Hamilton, Ont.	125,000	101,000	10,000	40,000 00	40,000 00
Regal Films, Ltd	Toronto, Ont.	375,000	362,500		75,000 00	25,000 00
Regina Shoe Co., Ltd.	Montreal, Que.	199,900	100,000			
Reid (Geo. W). & Co., Ltd.	"	150,000	86,000			
Reindeer, Ltd	Toronto, Ont.	5,000	5,000			
Rein Drive Tractors, Ltd.	"	5,000,000	5,000,000			
Reliance Grain Co., Ltd	Winnipeg, Man.	250,000	250,000			
Remington Typewriter Co., Ltd.	Toronto, Ont.	30,000	30,000			
Renforth Realty Co., Ltd	Montreal, Que.	50,000	36,600			
Retail Merchants Association of Canada	Ottawa, Ont.	*				
*Without share capital.						
Rettie & Smith, Ltd	Montreal, Que.	70,000	20,000	17,000		
Revillon Frères Trading Co., Ltd.	"	2,000,000	1,800,000			
Reynolds Timber, Shipping and Insurance Agency, Ltd.	Vancouver, B.C.	50,000	40,000			
Ribbons, Ltd.	Toronto, Ont.	50,000	40,500			
Rice Studio, Ltd	Montreal, Que.	50,000	7,700	35,000		
Richardson (James) Co., Ltd	Matane, Que.	200,000	66,500			
Richelieu Realty Co., Ltd.	Montreal, Que.	100,000	26,300			
Rideau Lumber Co., Ltd.	Ottawa, Ont	100,000	26,000			
Rio de Janeiro & Sao Paulo Telephone Co., Ltd.	Toronto, Ont.	5,000,000	5,000,000		7,500,000 00	7,500,000 00
Rio de Janeiro Tramway Light & Power Co., Ltd.	Toronto, Ont.	50,000,000	45,000,000		25,000,00000	25,000,000 00
					£3,016000 00	£5,266,00000
				Fcs	56,610,000 00	£1,028,00000
					£2,000000 00	
Riordon Pulp & Paper Co., Ltd.	Montreal, Que.	6,000 000	4,500,000	1,000,000	2,500,000 00	2,297,000 00
Ritchie (Harold F.) & Co., Ltd.	Toronto, Ont.	600,000	307,000	7,300		
Ritchie (John) Co., Ltd.	Quebec, Que.	300,000	67,600	150,000		
River Lievre Navigation Co., Ltd.	Buckingham, Que	50,000	13,000			
Riviera Realty Co., Ltd.	Montreal, Que.	86,300	86,300			
Robb Engineering Works, Ltd.	"	1,500,000	600,000	400,000	225,000 00	225,00000
Robertson (Farquhar), Ltd	"	250,000	250,000			
Robertson (James) Co., Ltd.	"	2,000,000	748,700			
Robertson (J. T.), Co. of Canada, Ltd.	"	50,000	15,000			
Robillard (C.) & Co., Ltd	"	75,000	50,000			
Robin Hood Mills, Ltd	Calgary, Alta.	200,000	200,000			
Robin, Jones & Whitman, Ltd.	Halifax, N.S.	1,750,000	562,800	848,000	250,000 00	250,000 00
Robinson, Little & Co., Ltd.	London, Ont.	2,000,000	804,000	650,000		
Robinson's Clothes Shops, Ltd.	Montreal, Que.	150,000	150,000			
Rob Roy Mills, Ltd	Toronto, Ont.	250,000	200,000			
Rockwood Sprinkler Co. of Canada, Ltd.	Montreal, Que.	75,000	15,000			

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LIST of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts	$ cts.
Roe (F. G.), Ltd	Montreal, Que	49,000	30,100			
Rolph-Clark Stone, Ltd.	Toronto, Ont	3,000,000	354,000	1,111,000	300,000 00	200,000 00
Rose & Laflamme, Ltd	Montreal, Que	125,000	85,900			
Rosemount Land Co., Ltd	"	200,000	192,200			
Ross (Art") Sales Co., Ltd	"	50,000	5,400			
Ross Realty Co., Ltd	"	1,500,000	158,000	117,000	100,000 00	100,000 00
Rothesay Realty Co., Ltd	"	50,000	19,500			
Round (John) & Son, Ltd	"	500,000	97,900			
Routleys, Ltd	Toronto, Ont	40,000	20,200			
Rowan Bros. & Co., Ltd.	Montreal, Que	40,000	40,000			
Rowatt, Ahearn, Ltd	Ottawa, Ont.	30,000	5,600			
Roxton Mill & Chair Mfg., Co., Ltd	Waterloo, Que	50,000	22,500			
Rubber Regenerating Co. of Canada, Ltd	Montreal, Que	20,000	20,000			
Rubinovitch & Haskell, Ltd	"	250,000	10,000	150,000		
Rudel-Belnap Machinery Co., Ltd	"	40,000		30,200		
Rugg Ball Mfg. Co., Ltd	Ayers Cliff, Que	20,000	10,000			
Russell Co., Ltd.	Ottawa, Ont.	495,000	403,800			
Russell Murray Cocoa Mills, Ltd	Montreal, Que	100,000	50,000	24,500		
Russo-Canadian Mining Corporation, Ltd	Toronto, Ont	1,000,000	25			
Ste. Agathe Lumber & Construction Co., Ltd	Ste. Agathe des Monts, Que.	300,000	150,000	150,000		
St. Charles Condensing Co., Ltd	Toronto, Ont	5,000	5,000			
St. Charles (F. X.) & Co., Ltd	Montreal, Que	200,000	160,000		50,000 00	50,000 00
St. Cloud Land Co., Ltd	Montreal, Que	300,000	225,000			
St. Hyacinthe Distillery Co., Ltd	St. Hyacinthe Que	1,000,000	308,500			
St. Hyacinthe Soft Sole Shoe Co., Ltd	St. Hyacinthe, Que	10,000	5,000			
St. Jacques Tobacco Packing Co., Ltd	Montreal, Que	150,000		50,000		
St. Lawrence Bridge Co., Ltd	"	3,000 000	3,000,000			
St. Lawrence Flour Mills, Ltd	"	1,800,000	1,200,000	575,000	300,000 00	300,000 00
St. Lawrence Power Co., Ltd	Toronto, Ont	1,500,000	400,000		300,000 00	300,000 00
St. Lawrence Starch Co., Ltd	Port Credit, Ont.	800,000	706,300			
St. Lawrence Sugar Refineries, Ltd	Montreal, Que	10,000,000	1,500,000	750,000	2,000,000 00	2,000,000 00
St. Lawrence Welding Co., Ltd	"	50,000	10,100			
St. Maurice Paper Co., Ltd	"	10,000 000	5,000 000		5,000,000 00	1,500,000 00
St. Pierre (Wm.), Ltd	"	150,000	70,000	80,000		
St. Regis Land Co., Ltd	"	200,000	200,000			
St. Thomas Bronze Co., Ltd	St. Thomas, Ont.	200,000	100,000	100,000		
San Antonio Land & Irrigation Co., Ltd	Toronto, Ont	8,000,000	8,000,000		£1,600,000	£1,200,000
Sanford (W. E.) Mfg. Co., Ltd	Hamilton, Ont.	1,000,000	525,000			
Sangamo Electric Co. of Canada, Ltd	Montreal, Que.	50,000	10,000			
Sao Paulo Electric Co., Ltd.	Toronto, Ont.	10,000,000	5,000,000		£2,000,000	£2,000,000
Saskatchewan Elevator Co., Ltd.	Winnipeg, Man.	250,000	250,000			
Saskatchewan Exploration & Development Co., Ltd	Toronto, Ont.	40,000	10,000	20,000		
Scales & Roberts, Ltd.	Toronto, Ont.	500,000	300,000	105,100		
Schultz Bros. Co., Ltd.	Brantford, Ont.	400,000	294,400			
Scott (James) & Co., Ltd	Montreal, Que.	100,000	41,200			
Scott (Wm.) Co., Ltd.	Ottawa, Ont.	100,000	78,000			
Scottish Canadian Magnesite Co., Ltd.	Montreal, Que.	600,000	520,000	50,000	230,000 00	230,000 00
Seagram (Joseph E.) & Sons, Ltd	Waterloo, Ont.	1,000,000	1,000,000			
Security Elevator Co., Ltd	Winnipeg, Man.	500,000	400,000			
Seely Mfg. Co., Ltd.	Windsor, Ont.	100,000	35,600	26,750		
Sellers Anchor Bottom Tie Plate Co. of Canada, Ltd	Montreal, Que.	100,000	100,000			
Semi-Ready, Ltd.	"	250,000	250,000			
Severine & Co., Ltd.	"	40,000	6,750			
Sewards, Ltd.	"	30,000	23,800			
Sharpe (C. A.), Ltd.	"	150,000	28,700			
Shawinigan Cotton Co., Ltd	Shawinigan Falls, Que.	1,000,000	1,000,000		2,700,000 00	1,366,000 00
Shearer (James) Co., Ltd	Montreal, Que.	500,000	328,000			
Sheldon Forwarding Co., Ltd.	"	1,500,000	700,000			
Sheldons, Ltd.	Galt, Ont.	600,000	300,000		200,000 00	200,000 00
Sherbrooke Iron Metal & Hide Co., Ltd	Sherbrooke, Que.	50,000	20,000			
Sherbrooke Iron Works, Ltd	"	150,000	116,000			
Sherbrooke Machinery Co., Ltd.	"	100,000	98,400			
Sherer-Gillett Co., Ltd	Guelph, Ont	100,000	75,100			
Sherwin-Williams Co. of Canada, Ltd.	Montreal, Que.	8,000,000	4,000,000	32,870	4,000,000 00	2,325,800 00
Shimer Cutter Head Co. of Canada, Ltd.	Galt, Ont.	50,000	22,000			
Shurly (T. F.) Co., Ltd.	St. Catharines, Ont.	200,000	123,700			
Sigman-Lande Co., Ltd.	Montreal, Que.	40,000	15,000			
Simon (H.) & Sons, Ltd.	"	199,000	100,000			
Simon's Ladies Wear, Ltd.	"	20,000	10,000			

LIST of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts	$ cts.
Simonds Canada Saw Co., Ltd.	Montreal, Que.	125,000	100,000			
Simplex Floor Finishing Appliance Co., Ltd.	"	25,000	5,000			
Sincennes-McNaughton Line, Ltd.	"	750,000	400,000			
Slater (Geo. A.), Ltd	"	300,000	21,700	42,600		
Slater Shoe Co., Ltd.	"	400,000	250,000			
Slingsby Mfg. Co., Ltd.	Brantford, Ont.	1,000,000	280,300			
Small (E. A.) Co., Ltd.	Montreal, Que.	200,000	50,000	70,000		
Smith (Albert J.) Lumber Co., Ltd.	"	25,000	24,100			
Smith Brothers of Montreal, Ltd.	"	40,000	10,500			
Smith (Howard) Paper Mills, Ltd.	"	3,000,000	1,062,500	475,000		
Smith, Denne & Moore, Ltd.	Toronto, Ont.	10,000	10,000			
Smith Patterson Co., Ltd.	Montreal, Que.	125,000	125,000			
Smith (R. Lawrence), Ltd.	"	5,000	5,000			
Smith (Stephen) &Co. (Canada), Ltd.	Toronto, Ont.	10,000	1,000			
Smith Typewriter Co. of Canada, Ltd	Montreal, Que.	50,000	18,000			
Snap Co., Ltd.	"	90,000	50,000	40,000		
Snider (Wm.) Milling Co., Ltd.	Waterloo, Ont.	50,000	48,000			
Société Foncière du Canada, Ltd.	Montreal, Que.	900,000	75,000			
Solex Co., Ltd.	"	50,000	33,800			
Sommer (A.) & Co., Ltd.	"	100,000	100,000			
Soo Line Mills, Ltd.	Weyburn, Sask.	150,000	75,000			
Southam Press, Ltd.	Toronto, Ont.	2,500,000	1,007,800		750,000 00	695,000 00
Southern Canada Power Co., Ltd	Montreal, Que.	6,000,000	3,000,000	240,400	3,000,000 00	2,138,100 00
Southern States Securities Co., Ltd.	"	50,000	50,000			
Sparks Harrison, Ltd.	Hull, Que.	40,000	39,200			
Spencer Grain Co., Ltd.	Winnipeg, Man.	149,000	100,000			
Standard Chemical Iron & Lumber Co., Ltd.	Toronto, Ont.	5,000,000	1,250,000	3,602,700		
Standard Clay Products, Ltd.	St. Johns, Que.	1,000,000	750,000			
Standard Elevator Co., Ltd.	Winnipeg, Man.	250,000	99,600			
Standard Explosives, Ltd.	Montreal Que.	300,000	130,000	100,000	50,000	
Standard Imports, Ltd.	"	20,000	20,000			
Standard Iron Co., Ltd.	"	300,000	150,000	150,000		
Standard Jewellery Co., Ltd.	Sherbrooke, Que.	20,000	20,000			
Standard Lumber Co. of Manitoba, Ltd.	Winnipegosis, Man	125,000	125,000			
Standard Machinery & Supplies, Ltd.	Montreal, Que.	250,000	200,000			
Standard Paint Co. of Canada, Ltd.	"	150,000	150,000		150,000 00	150,000 00
Standard Photo Engraving Co., Ltd	"	10,000	10,000			
Standard Realty Investment Corporation, Ltd.	"	50,000	18,000			
Standard Underground Cable Co. of Canada, Ltd.	Hamilton, Ont.	1,000,000	500,000	350,000		
Stanfords, Ltd.	Montreal, Que.	240,000	150,000		60,000 00	60,000 00
Stanley & Aylward, Ltd.	Toronto, Ont.	50,000	23,700			
Stanley Steel Co., Ltd.	Hamilton, Ont.	250,000		100,000		
Stanstead Granite Quarries Co., Ltd.	Beebe, Que.	150,000	75,900			
Starke Seybold, Ltd.	Montreal, Que.	400,000	50,500	150,000		
State Elevator Co., Ltd.	Winnipeg, Man.	100,000	75,000			
Stearns (Frederick) & Co. of Canada, Ltd.	Windsor, Ont.	600,000	360,090	37,075		
Steel Equipment Co., Ltd.	Pembroke, Ont.	150,000	74,000		50,000 00	50,000 00
Sterling Coal Co., Ltd.	Toronto, Ont.	3,500,000	2,500,000		2,500,000 00	1,750,000 00
Sterling Engine Works, Ltd.	Winnipeg, Man.	25,000	15,000			
Sterling Press, Ltd.	Montreal, Que.	20,000	17,200			
Stevens (J.) & Son Co., Ltd.	Toronto, Ont.	50,000				
Stewart (A. T.) Co., Ltd.	Montreal, Que.	50,000	35,000			
Stilenfit Clothing, Ltd.	"	150,000	100,000			
Stinson-Reeb Builders Supply Co., Ltd.	"	100,000	50,000			
Stowell Screw Co., Ltd.	Montreal, Que.	50,000	31,700			
Stratford Bridge & Iron Works Co., Ltd.	Stratford, Ont.	100,000	20,300	15,000		
Strong Lumber Co., Ltd.	Orillia, Ont.	200,000	200,000			
Structural Engineering Co., Ltd	Montreal, Que.	50,000	19,900			
Studebaker Corporation of Canada, Ltd.	Walkerville, Ont.	400,000	400,000			
Sturtevant (B. F.) Co. of Canada, Ltd.	Galt, Ont.	50,000	8,000			
Sully (Geo.) Ltd.	Montreal, Que	40,000	15,000			
Sultana, Ltd.	"	90,000	60,000			
Sunshine Laundry Co., Ltd.	"	50,000	29,000			
Superior Electrics, Ltd.	Pembroke, Ont.	100,000	50,000			
Superior Elevator Co., Ltd.	Winnipeg, Man.	150,000	150,000			
Superior Tile Co., Ltd	Fort William, Ont	40,000	10,000			
Superior Tubes & Accessories, Ltd.	Toronto, Ont.	300,000	225,000	75,000		
Swedish Steel & Importing Co., Ltd.	Montreal, Que.	50,000	45,300			
Tabah (F.) & Brothers, Ltd	"	48,000	30,000			
Tallman Brass & Metal, Ltd.	Hamilton, Ont.	800,000	200,000	300,000		
Tate Electrolytic Waterproofing Processes, Ltd.	Montreal, Que.	300,000	250,000	39,000		

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List of Companies which have submitted the Return prescribed by Section 106 of the Companies Act.—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts	$ cts.
Taylor & Arnold, Ltd.	Montreal, Que.	100,000	45,000			
Tebbutt Shoe & Leather Co., Ltd.	Three Rivers, Que	250,000	150,000		150,000 00	
Telford & Chapman, Ltd.	Rock Island, Que.	100,000	29,500			
Terminal Cities of Canada, Ltd	Winnipeg, Man.	2,300,000	2,300,000		3,300,000 00	3,300,000 00
Terminal Grain Co., Ltd.	Winnipeg, Man.	100,000	100,000			
Tetrault Shoe Mfg. Co., Ltd	Montreal, Que.	1,000,000	325,000	402,000	300,000 00	
Thomas Co., Ltd.	Quebec, Que.	145,000	65,000			
Thomson (Fred.) Co., Ltd	Montreal, Que.	250,000	121,000	125,000		
Thompson (B. & S. H.) & Co., Ltd	"	250,000	100,000	125,900		
Thompson Shoe Co., Ltd	"	100,000	44,000	25,000		
Thorton & Douglas, Ltd	Hamilton, Ont.	250,000	102,500			
Three Star Silver Mines, Ltd.	Toronto, Ont.	3,000,000	3,000,000			
Thunder Bay Elevator Co., Ltd.	Winnipeg, Man.	1,000,000	294,000	72,000		
Thunder Bay Terminal Elevator Co., Ltd.	Winnipeg, Man.	1,000,000	775,000			
Tobacco Products Corporation of Canada, Ltd.	Montreal, Que.	250,000	250,000			
Toilet Laundry Co., Ltd.	Montreal, Que.	100,000	50,000			
Tolton (Harry) Ltd.	Kitchener, Ont.	150,000	150,000			
Tooke Brothers, Ltd.	Montreal, Que.	2,500,000	650,000	985,000		
Tooke, (R. J.) Ltd.	"	300,000	300,000			
Torean Fancy Goods Co., Ltd.	Toronto, Ont.	40,000	19,100			
Toronto Butchers Supply Co., Ltd	"	40,000	40,000			
Toronto Carpet Mfg. Co., Ltd	"	2,000,000	517,200	493,600		
Toronto Hardware Mfg. Co., Ltd.	"	500,000	500,000			
Toronto Paper Mfg. Co., Ltd.	"	1,000,000	750,000		750,000 00	750,000 00
Toronto Structural Steel Co. Ltd.	"	1,000,000	300,000	300,000	150,000 00	150,000 00
Toronto Type Foundry Co., Ltd	"	400,000	350,000	50,000		
Transcontinental Realty Co., Ltd	Montreal, Que.	100,000	18,100			
Transportation Building Co., Ltd.	Montreal, Que.	750,000	500,000	250,000		
Trudeau Carriage, Ltd.	"	49,000	49,000			
Truro Condensed Milk Co., Ltd.	Toronto, Ont.	5,000	5,000			
Tuckett, Ltd	Hamilton, Ont.	10,000	1,000			
Tuckett (Geo. E.) & Son Co., Ltd.	Hamilton, Ont.	500,000	500,000			
Tuckett Tobacco Co., Ltd.	Hamilton, Ont.	4,500,000	2,500 000	2,000,000		
Tudhope Anderson Co., Ltd.	Winnipeg, Man.	3,000,000	1,000,000		1,000,000 00	1,000,000,00
Turnbull Electro Metals, Ltd.	St. Catharines, Ont	50,000	26,000			
Two Macs, Ltd	Ottawa, Ont	100,000	50,000	50,000		
Underhill Coal and Coke Co., Ltd.	Toronto, Ont.	40,500	40,500			
Union Carbide Co. of Canada, Ltd.	Toronto, Ont.	3,000,000	2,000,000			
Union Grain Co., Ltd.	Winnipeg, Man.	50,000	25,000			
Union Rubber Co. Ltd.	Montreal, Que.	50,000	20,000			
Union Screen Plate Co. of Canada.	Lennoxville, P.Q.	20,000	20,000			
Union Special Machine Co. of Canada, Ltd.	Toronto, Ont.	25,000	25,000			
United Grain Growers, Ltd.	Winnipeg, Man.	5,000,000	2,798,750		1,000,000 00	
United Grain Growers Securities Co., Ltd.	Calgary, Alta	100,000	25,000			
United Last Co., Ltd	Montreal, Que.	300,000	300,000			
United Paper Products Co., Ltd	Vancouver, B.C.	100,000	42,500	25,000		
United Shoe Machinery Co. of Canada, Ltd.	Montreal, Que.	1,000,000	1,000,000			
Universal Asbestos Co., Ltd.	Sherbrooke, Que.	50,000	25,000			
Universal Button Fastening & Button Co. of Canada, Ltd.	Walkerville, Ont	20,000	20,000			
Universal Tool Steel Co. Ltd.	Toronto, Ont.	10,000,000	9,500,000	100,000		
Upper Fraser Lumber Co., Ltd.	Montreal, Que.	3,250,000	750,000	1,660,000	750,000 00	
Uptown Land Co., of Montreal, Ltd.	"	100,000	100,000			
Vafiadis (Theodoro) & Co., Ltd.	"	30,000	30,000			
Vaillancourt (J. A.) Ltd.	"	200,000	47,000			
Vallens & Co., Ltd.	London, Ont	150,000	150,000			
Vancouver-Prince Rupert Ranching Co. Ltd	Vancouver B.C	300,000	157,000			
Vanderhnof & Co., Ltd.	Windsor, Ont	10,000	6,600			
Vanderhoof, Scott & Co., Ltd.	Toronto, Ont	50,000	35,000		15,000 00	2,500 00
Van Allen Co. Ltd	Hamilton, Ont.	500,000	205,500			
Van der Linde Rubber Co., Ltd.	Toronto, Ont.	350,000	225,000	108,100		
Venezuela Electric Light Co., Ltd	Toronto, Ont.	1,500,000	900,000		900,000 00	900,000 00
Verity Plow Co., Ltd.	Brantford, Ont.	600,000	504,900			
Verret, Stewart & Co. Ltd	Montreal, Que.	75,000		55,000		
Versailles, Vidricaire, Boulais Ltd.	"	50,000	50,000			
Veterinary Specialty Co. Ltd.	Alliston, Ont.	40,000	25,000			
Victorin Elevator Co., Ltd.	Winnipeg, Man	300,000	160,000			
Victoria Navigation Co., Ltd	Ottawa, Ont.	50,000	8,000			
Victorin Whaling Co. Ltd	Toronto, Ont.	250,000	250,000			
Villa Bros. of Canton, Ltd.	Ottawa, Ont.	1,000	500			
Villa Bros. of Japan, Ltd.	"	1,000	500			
Villa Bros. of Shanghai, Ltd	"	1,000	500			
Villeneuve (L.) & Co., Ltd.	Montreal, Que.	200,000	140,100			
Vineberg (H.) & Co., Ltd.	"	250,000	150,000	100,000	600,000 00	600,000 00
Vipond Fruit Co., Ltd.	Winnipeg, Man.	35,000	35,000			

LIST of Companies which have submitted the Return prescribed by Section 106 of the Companies Act—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts	$ cts.
Virtue & Co., Ltd.	Toronto, Ont.	40,000	25,100			
Vogel, (H. G.) Co., (Canada) Ltd.	Montreal, Que.	20,000	15,000			
Vulcan Asphalt & Supply Co. Ltd.	Winnipeg, Man.	10,000	7,000			
Wabasso Cotton Co., Ltd.	Three Rivers Que.	1,750,000	1,750,000		1,600,000	1,600,000
Wagner Chambers Co., Ltd.	Toronto, Ont.	49,900	49,900			
Wagner Electric Mfg. Co. of Canada, Ltd.	Montreal, Que.	50,000	50,000			
Walker, (J. R.) & Co. Ltd.	"	250,000	150,000			
Wallingford Bros. Ltd.	Ottawa, Ont.	100,000	99,600			
Walpole Rubber Co. of Canada, Ltd.	Montreal, Que.	10,000	10,000			
Walsh, (M.) & Co., Ltd.	"	75,000	61,500			
Walsh Plate & Structural Works, Ltd.	Drummondville East, Que.	250,000	80,000	9,000		
Walters (H) & Sons Ltd.	Hull, Que.	350,000	249,000	28,200		
Waterman (L. E.) Co., Ltd.	Montreal, Que.	100,000	10,000			
Waterous Engine Works Co., Ltd.	Brantford, Ont.	250,000	250,000			
Watson-Foster Co. Ltd.	Montreal, Que.	450,000	450,000			
Watson Jack & Co. Ltd.	"	200,000	200,000			
Watt & Scott, Ltd.	"	200,000	60,000	50,600		
Watterson (J.) & Co., Ltd.	"	150,000	150,000			
Watts (E.) R.) & Son Canada, Ltd.	Ottawa, Ont.	100,000	60,700			
Wayagamack Pulp & Paper Co., Ltd.	Three Rivers, Que.	5,000,000	5,000,000		5,000,000 00	3,500,000 00
Wayland Shoe, Ltd.	Montreal, Que.	30,000	25,100			
Wayne Oil Tank & Pump Co., Ltd.	Woodstock, Ont.	50,000	49,600			
Webster (W. R.) & Co., Ltd.	Sherbrooke, Que.	250,000	121,800			
Wedgewood Construction Co., Ltd.	Montreal, Que.	50,000	7,000			
Wedgewood Park Co., Ltd.	Montreal, Que.	100,000	79,200			
Weiss (B.) & Son Ltd.	Toronto, Ont.	45,000	45,000			
Welch Co., Ltd.	St. Catharines, Ont.	300,000	300,000			
Weld (Wm.) Co., Ltd.	London, Ont.	40,000	40,000			
Welland Vale Mfg. Co., Ltd.	St. Catharines, Ont.	450,000	330,000			
Wellington Comox Agency, Ltd.	Montreal, Que.	500,000	500,000			
Wells & Richardson Co., Ltd.	"	120,000	120,000			
Wener (Samuel) & Co., Ltd.	"	150,000	100,000			
Wentworth Coal & Supply Co. Ltd.	Hamilton, Ont.	40,000	20,000			
West Hill Land Co. Ltd.	Montreal, Que.	175,000	175,000			
West Valley Land Co, Ltd.	"	70,000	50,000			
Western Countries Electric Co., Ltd.	Brantford, Ont.	500,000	200,000	120,000	100,000 00	100,000 00
Western Development Co., Ltd.	Toronto, Ont.	1,000,000	123,000			
Western Electric Co., Ltd.	Montreal, Que.	7,500,000	7,500,000			
Western Elevator Co., Ltd.	Winnipeg, Man.	300,000	300,000			
Western Explosives, Ltd.	Montreal, Que.	500,000	210,000			
Western Grain Co., Ltd.	Winnipeg Man.	100,000	100,000			
Western Mfg. Co., Ltd.	Regina, Sask.	250,000	191,000			
Western Park Co., Ltd.	Montreal, Que.	50,000	40,000			
Western Power Co., of Canada, Ltd.	Vancouver, B.C.	10,000,000	5,000,000	850,000	500,000 00	500,000 00
Western Salt Co., Ltd.	Toronto, Ont.	250,000	150,000	100,000		
Western Terminal Elevator Co. Ltd.	Winnipeg, Man.	1,000,000	711,300			
Westmoreland, Co., Ltd.	Montreal, Que.	200,000	110,000			
Westmount Investment Co., Ltd.	"	50,000	23,800			
Wheat Export Co., Ltd.	Winnipeg, Man.	1,000	1,000			
White (The) Co., Ltd.	Toronto, Ont.	40,000	10,000			
White (Geo.) & Sons Co., Ltd.	London, Ont.	170,000	170,000			
White (Robt.) Co. Ltd.	Montreal, Que.	295,000	295,000			
White Sewing Machine Co., of Canada Ltd.	Guelph, Ont.	500,000	200,000			
Whitehead (E. A.) Co., Ltd.	Montreal, Que.	100,000	50,000			
Whitehead & Turner, Ltd.	Quebec, Que.	300,000	195,000			
Whittall (A. R.) Can Co., Ltd.	Montreal, Que.	500,000	300,000		100,000	100,000 00
Wiener (J.) & Son, Ltd.	Toronto, Ont.	40,000	40,000			
Wiegand, (J. E.) & Co., Ltd.	Kitchener, Ont.	40,000	40,000			
Wiley, (A. T.) & Co., Ltd.	Montreal, Que.	150,000	150,000			
Wilkins (Robert C.) Co., Ltd.	Farnham, Que.	95,000	37,400	10,000		
Williams Shoe, Ltd.	Brampton, Ont.	200,000	74,400			
Williams-Thomas, Ltd.	Montreal, Que.	125,000	113,000	12,000	50,000	14,500 00
Williams & Wilson, Ltd.	Montreal, Que.	500,000	498,000			
Willis & Co., Ltd.	"	1,000,000	850,000			
Wilson & Lafleur, Ltd.	"	80,000	26,300			
Wilson Carbon Paper Co., Ltd.	"	10,000	1,000			
Wilson Chemical Co. Ltd.	St. John N.B.	24,000	6,000			
Wilson (J. C.) Ltd.	Montreal, Que.	1,000,000	1,000,000		600,000 00	600,000 00
Wilt Twist Drill Co. of Canada, Ltd.	Walkerville, Ont.	500,000	243,200		275,000 00	275,000 00
Window Strip & Supply Co., Ltd.	Montreal, Que.	25,000	11,000			
Windsor (J. W.) Ltd.	"	50,000	25,800			
Wingate Chemical Co. Ltd.	"	30,000	30,000			
Winn & Holland, Ltd.	"	100,000	60,000			
Winnipeg Oil Co., Ltd.	Winnipeg, Man.	1,000,000	800,000			
Wiser (J. P.) & Sons, Ltd.	Prescott, Ont.	500,000	370,000			
Wod Mop Co., Ltd.	Montreal, Que.	35,000	35,000			
Wolthausen Hat Corporation, Ltd.	Brockville, Ont.	1,000,000	580,000	100,000	40,000 00	35,900 00

LIST of Companies which have submitted the Return prescribed by Section 106 of the Companies Act.—*Continued.*

Name of Company.	Head Office.	Authorized Capital.	Common Stock Issued.	Preferred Stock Issued.	Debentures or Bonds Authorized.	Debentures or Bonds Issued.
		$	$	$	$ cts.	$ cts.
Woods (Edwin S.) & Co., Ltd.	Montreal, Que.	40,000	40,000			
Woods Mfg. Co. Ltd.	"	5,000,000	1,718,600	1,546,500	500,000 00	500,000 00
Woodward & Co., Ltd.	Winnipeg, Man.	100,000	100,000			
Workman (C. A.) Ltd.	Montreal, Que.	50,000	30,000			
Woolworth (F. W.) Co., Ltd	Toronto, Ont.	75,000	75,000			
Workman (Mark) Co., Ltd.	Montreal, Que.	100,000	100,000			
Wright (E. T.) Co., Ltd.	Hamilton, Ont.	600,000	522,000			
Wrigley (Wm.) Jr. Co., Ltd.	Toronto, Ont.	2,000,000	1,500,000	500,000 00		
Wrought Iron Range Co., Ltd.	Toronto, Ont.	100,000	43,500			
Yule Corporation, Ltd.	Quebec, Que	50,000	5,000			
Yocum Faust Ltd.	London, Ont.	50,000	8,500			
York Farmers Colonization Co., Ltd.	Toronto, Ont	180,000	86,520			
Young, (D. A.) Ltd.	Montreal, Que.	50,000	20,000			
Young Grain Co., Ltd.	Winnipeg, Man.	300,000	125,000			
Youngheart (Ed.) & Co., Ltd	Montreal, Que.	100,000	100,000			
Zenith Grain Co., Ltd	Winnipeg, Man.	50,000	50,000			

Summary:

Total authorized capital	$1,737,814,234.00
" common stock issued	1,017,819,229.20
" preferred stock issued	200,725,317.43
" debentures or bonds authorized	649,818,785.00
" debentures or bonds issued	509,549,212.62

Note: Sterling converted at $4.86⅔
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